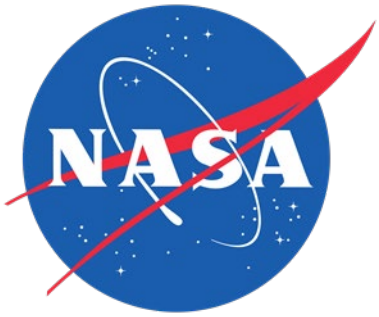
PARTIAL AIR SPARGE SYSTEM ABANDONMENT AT LAUNCH COMPLEX 39B, SWMU 009 IMPLEMENTATION REPORT

KENNEDY SPACE CENTER, FLORIDA

Prepared for



National Aeronautics and Space Administration
John F. Kennedy Space Center

April 2023
Revision 0

Prepared by

HydroGeoLogic, Inc.
2405 North Courtenay Parkway, Suite 203
Merritt Island, FL 32953
(407) 737-1881

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ACRONYMS AND ABBREVIATIONS

AS	air sparge
HGL	HydroGeoLogic, Inc.
KSC	Kennedy Space Center
LC	launch complex
MW	monitoring well
NASA	National Aeronautics and Space Administration
SLS	Space Launch System
SWMU	solid waste management unit

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PARTIAL AIR SPARGE SYSTEM ABANDONMENT AT LAUNCH COMPLEX 39B, SWMU 009 IMPLEMENTATION REPORT (REVISION 0) KENNEDY SPACE CENTER, FLORIDA

1.0 INTRODUCTION

1.1 OVERVIEW

HydroGeoLogic, Inc. (HGL) prepared this Partial Air Sparge (AS) System Abandonment Implementation Report at Launch Complex (LC) 39B, Solid Waste Management Unit (SWMU) 009 for the National Aeronautics and Space Administration (NASA), Kennedy Space Center (KSC), Florida, under Contract Number 80KSC019D0012, Task Order 80KSC022F0024, Technical Directive No.1 awarded on November 16, 2022.

1.2 BACKGROUND

LC39B was constructed in the mid-1960s to support the Apollo Space Program and the United States' mission to the Moon. LC39B was built as a backup to LC39A, the initial launch event occurred in 1968 for Apollo 10, the first manned flight to orbit the Moon. The LC included a launch pad, hypergolic fuel areas, support facilities, and the Crawlerway to facilitate launch vehicle transport to the pads. The launch pad was originally designed to facilitate a mobile structure that supported the Apollo vehicles during preparation, transport, and lift-off. The Saturn V rocket was replaced with the Saturn IB rocket in 1973 with further pad retrofitting required to accommodate the shorter rocket. The Apollo Space Program culminated in 1975 with the U.S.-Soviet Apollo-Soyuz Test Project Mission (National Air and Space Museum, 2020).

Following the conclusion of the Apollo Space Program, permanent service towers replaced the "clean pad" design to support the Space Shuttle Program. The Space Shuttle era occurred from 1981 through the final 2011 flight. After cancellation of the Constellation Program in 2010, the Flight Service Structure was removed from LC39B, returning the pad to a more versatile "clean pad" design. LC39B has been upgraded to support the launch of NASA'S Space Launch System (SLS) rocket and Orion Spacecraft Artemis missions (NASA, 2020). The most recent launch at LC39B was the unmanned SLS rocket launch which occurred on November 16, 2022.

1.3 SITE DESCRIPTIONS

KSC is located on the northern portion of Merritt Island, between the Indian and Banana River Lagoons, in Brevard County, Florida. LC39B is located on the eastern portion of KSC, approximately 0.5 miles inland from the Atlantic Ocean, oriented parallel to the coastline. The launch pad encompasses approximately 160 acres and is octagonal in shape. Access to the complex is controlled 24 hours per day. The LC can be accessed by Saturn Causeway to the south or Cape Road to the east. Crawler Parkway connect the LC to the Vehicle Assembly Building to the west. **Figure 1.1** shows the site location and **Figure 1.2** shows the site layout.

AS operations began at LC39B in 2017 in the area west of the launch pad, in the liquid oxygen tank area located northwest of the launch pad, and in an area outside of the perimeter fence to protect nearby Outstanding Florida Waters. The LC39B AS system consisted of 279 AS wells, installed to depths ranging from 23 to 60 feet below land surface, including the sump, correlating to top of screen depths ranging from 20 to 57 feet below land surface. The AS System Construction Completion Report is included in **Appendix A**. The remedial objective of the LC39B groundwater Interim Measure was to actively decrease concentrations of contaminants of concern in groundwater, specifically trichloroethylene, cis-dichloroethane, and vinyl chloride, to less than their respective natural attenuation default concentrations so that LC39B can transition into a Long-Term Monitoring Program (Tetra Tech, 2022).

1.4 OBJECTIVES

This project included AS system abandonment activities for a small portion of the LC39B AS system in support of crane operations planned at LC39B. The specific objectives are:

- Remove/cap AS system components and abandon AS/monitoring wells (MWs) within identified area in support of critical mission support construction operations;
- Photograph, document size, and location of any AS piping to be left in place;
- Provide as-builts with survey data of piping that is left in place so it can be provided to the KSC Master Planning office for recording by RPM; and
- Properly transport concrete and other construction debris off site and dispose of at an appropriate facility in accordance with all local and federal regulations.

Following completion of abandonment activities, ensure all areas of operation are graded so no trip hazards exist.

2.0 AIR SPARGE ABANDONMENT ACTIVITIES

2.1 PRE- AIR SPARGE ABANDONMENT ACTIVITIES

HGL received/reviewed a figure provided by KSC with highlighted AS wells to be abandoned and AS piping that were to be cut and capped within the identified area of facility construction operations. HGL conducted pre-AS system decommissioning activities that included the following:

- Investigation of the site to determine site conditions and existing AS components.
- Collected sub-meter global positioning system coordinates of construction operations boundary marked by Advon Construction (construction contractor).
- Coordinated work activities with KSC facility managers, Remediation Project Manager, KSC ecologist, KSC locators, and the KSC Institutional Support Contractor.
- Obtained applicable permits, including Record of Environmental Consideration, KSC excavation permit, and well abandonment permits.
- Conducted a nuts-and-bolts safety meeting with field staff and KSC safety personnel.
- Provided oversight for biological survey for threatened and endangered species completed by the KSC wildlife ecologist.
- Coordinated and attended utility locates. Maintained/refreshed markings as necessary. Because of the utilities in the area, it was noted that heavy equipment could not be used and the area was "hand dig only."
- Coordinated a ground penetrating radar survey by HGL's subcontractor in addition to the KSC utility locates to identify locations of AS system lines, AS wells, and utilities in work area.
- Completed access training for HGL personnel to escort subcontractors.
- Collected sub-meter global positioning system coordinates of all AS system features to remain in place.

2.2 SYSTEM DECOMMISSIONING ACTIVITIES

Partial abandonment of the AS system at LC39B was completed between November 28, 2022, and December 2, 2022. Prior to each day of field work, daily "tailgate safety meetings" were held to discuss daily activities, review health and safety concerns and protocol for operations to be conducted during the day and confirm communication procedures. The dig status and daily forecasted weather and weather warning protocols also were discussed during these meetings. All applicable project and site-specific documentation (permits, Site-Specific Safety and Health Plan, maps, work plan, etc.) were kept on site throughout the duration of decommissioning activities.

The AS system at LC39B included 279 AS wells, installed to depths ranging from 23 to 60 feet below land surface and associated piping in four zone (Z1 through Z4). The system components (trailer, compressor, etc.) were outside the construction operations footprint and were not interfered with during HGL abandonment activities. Of the 279 AS wells, 22 AS wells and 7 MW

were determined to be within the area of construction operations and needed to be abandoned prior to construction activities.

The first phase of work included potholing the AS piping to expose piping that needed to be cut and capped. After the AS lines were exposed, all the AS piping that ran through the construction operations footprint was cut and capped with a polyvinyl chloride cap. In total, approximately one hundred and eight 1-inch and eleven 2-inch AS pipe runs were cut and capped. Some lines were capped entering the construction operations footprint and exiting the footprint resulting in some AS lines being cut and capped at multiple locations. After discussion with the NASA Remediation Project Manager and construction operations contractor, piping within the construction operations boundary was left in place and would be removed by the construction contractor during construction operations.

Following the capping of the AS piping falling within the construction operations footprint, the below grade AS wells and flush-mount MWs were located and abandoned by a certified water well contractor who obtained applicable abandonment permits from the Brevard County Department of Health. Abandonment included grouting each AS and MW well from bottom to top. MW surface completions including concrete pads and well vaults were removed to be either recycled or disposed of at Schwartz Road landfill, as applicable. Manholes and vaults located in the concrete at ASW0233 were left in place and filled with concrete. A total of 22 AS wells (3 in Zone Z1 and 19 in Zone Z3) and 7 MWs were abandoned. **Table 2.1** lists the abandoned wells, screen interval and coordinates. Abandonment permits were completed and submitted to the Brevard County Department of Health for all AS and MW wells and included in **Appendix B**.

Figure 2.1 shows the AS and MWs that were abandoned as well as AS pipe capping locations and the construction operations footprint. Removed piping, components, and well materials were disposed of at the Schwartz Road Landfill. Weigh tickets from the Schwartz Road landfill are included in **Appendix C** and a photo log for decommissioning activities is included in **Appendix D**. Field documentation, including daily reports, field notes, equipment inspection sheets and safety tailgate meeting logs are included in **Appendix E**.

3.0 SUMMARY

Partial abandonment of the AS system at LC39B was completed between November 28, 2022, and December 2, 2022. All AS and MW wells that were abandoned were done so by a Florida licensed water well contractor in accordance with all applicable regulations. Well abandonment permits were completed for all AS and MW wells that were abandoned. Concrete pads that were removed were transported to Schwartz Road landfill for disposal. Cut piping was sized and placed in contractors trash bags and disposed of in an on-site dumpster. Piping within the construction footprint was left in place to be removed by the construction contractor during construction operations. The area was set to be grubbed by the construction contractor, therefore, following abandonment, all AS and MW well locations were uniformly graded and backfilled with removed/surrounding soil to negate potential trip hazards due to uneven terrain.

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4.0 REFERENCES

National Aeronautics and Space Administration, 2020. *Artemis Plan, NASA's Lunar Exploration Program Overview*. September.

National Air and Space Museum, Neufeld, Michael, 2020. *Launch Complex 39: From Saturn to Shuttle to SpaceX and SLS*. May.

Tetra Tech, Inc, 2022. *Launch Complex 39A, SWMU 008 and Launch Complex 39B, SWMU 009 Performance Monitoring and Air Sparge Expansion Construction Report, Kennedy Space Center, Florida*. June.

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TABLES

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Table 2.1
Air Sparge and Monitoring Well Summary
Partial Air Sparge System Abandonment at Launch Complex 39B, SWMU 009
Kennedy Space Center, Florida

Location	Northing (ft)	Easting (ft)	Northing (m)	Easting (m)	Diameter (in)	Screen Interval (ft)
ASW0168	1560977.04	777193.05	475786.917	236888.902	2	56.8-58.8
ASW0169	1560984.47	777224.87	475788.886	236898.554	2	57.2-59.2
ASW0170	1561007.65	777246.47	475796.188	236905.094	2	57.2-59.2
ASW0174	1560942.30	777181.05	475776.186	236885.283	2	57-59
ASW0175	1560954.84	777211.01	475780.186	236894.3	2	57.2-59.2
ASW0176	1560963.89	777248.78	475782.853	236906.11	2	56.9-58.9
ASW0177	1560987.49	777260.54	475789.965	236909.539	2	57.1-59.1
ASW0178	1560926.08	777210.28	475770.2	236894.724	2	57.1-59.1
ASW0179	1560934.68	777238.79	475774.154	236903.063	2	55.1-57.1
ASW0186	1560890.03	777157.18	475760.565	236878.107	2	57.2-59.2
ASW0187	1560910.70	777184.37	475766.598	236886.426	2	57.1-59.1
ASW0191	1560868.73	777206.68	475753.707	236893.474	2	57.2-59.2
ASW0196	1560817.13	777146.53	475738.023	236874.615	2	57.1-59.1
ASW0197	1560842.07	777169.71	475745.389	236882.044	2	57.2-59.2
ASW0198	1560788.70	777154.34	475728.879	236877.409	2	57.2-59.2
ASW0199	1560816.83	777174.60	475737.896	236883.505	2	57-59
ASW0200	1560819.18	777205.98	475738.721	236893.03	2	57-59
ASW0201	1560789.70	777191.91	475729.577	236888.839	2	56.8-58.8
ASW0202	1560901.81	777240.95	475763.804	236903.634	2	50.6-52.6
ASW0204	1560946.34	777269.59	475777.583	236912.46	2	50.3-52.3
ASW0230	1560771.58	777257.74	475724.053	236908.714	2	49.9-51.9
ASW0233	1560645.06	777236.28	475685.572	236902.745	2	50-52
MW0010	1560900.18	777254.01	475763.3264	236907.4961	1	21.8-31.8
MW0016	1560945.65	777278.50	475778.6028	236913.795	1	20-30
MW0017	1560946.71	777277.25	475776.2215	236915.5942	1	30-40
HVAC-IW0002SI	1560672.925	777308.01	475693.341	236924.445	2	22-27
HVAC-IW0002I	1560672.925	777308.0087	475694.0588	236923.9549	2	32-37
ECS-IW0002I	1560928.59	777250.60	475771.9858	236906.4567	2	42-47
ECS-IW0003I	1561007.82	777280.16	475796.1351	236915.4666	2	45-50

Notes:

Spatial coordinates provided in U.S. State Plane North American Datum of 1983, Florida East (meters)

Acronyms

ft = feet

m = meters

in = inch

Table 2.2
Equipment Disposal Summary
Partial Air Sparge System Abandonment at Launch Complex 39B, SWMU 009
Kennedy Space Center, Florida

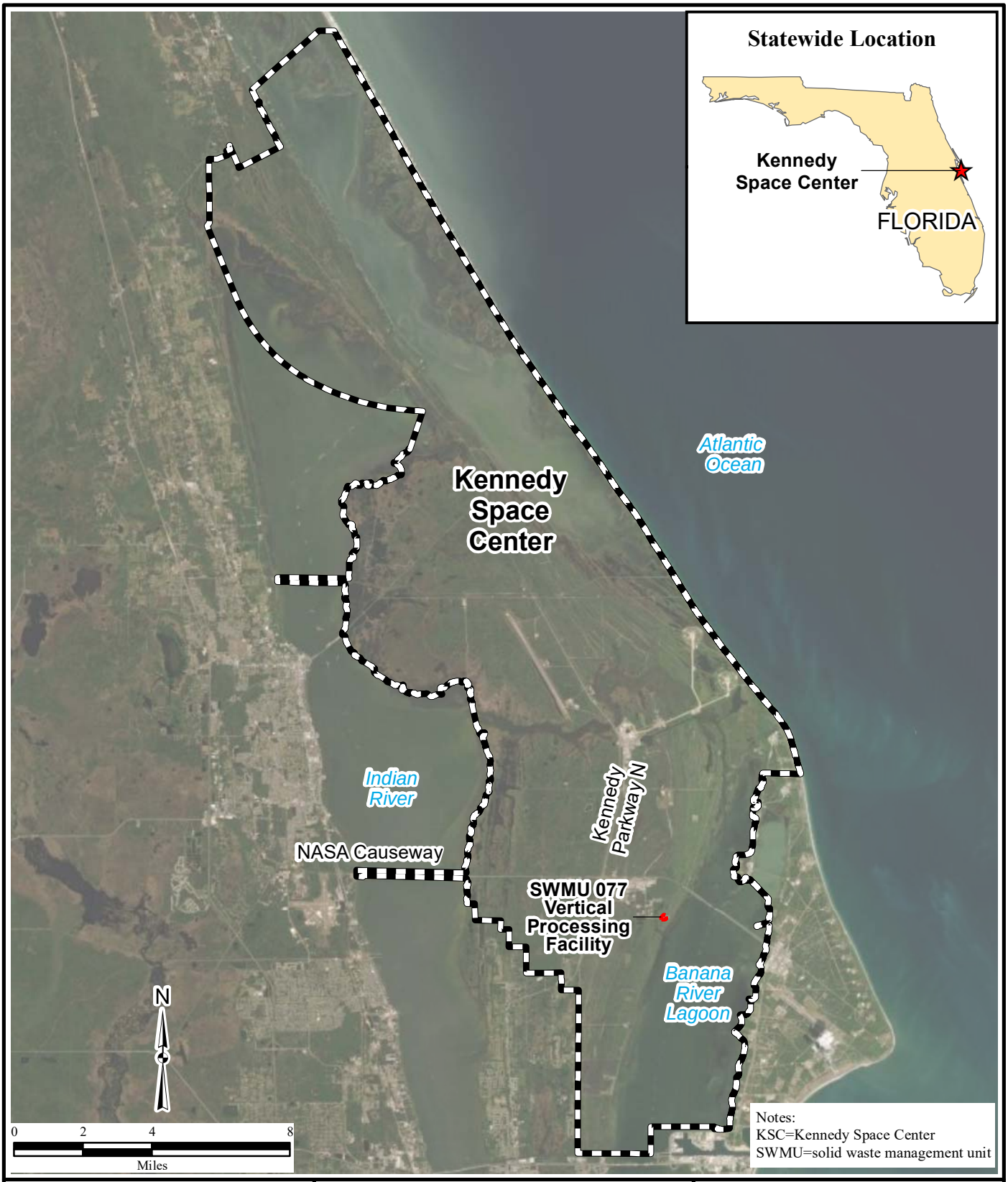
Material	General Description	Disposition
Concrete	Miscellaneous pads	Disposal at Schwartz Road Landfill
PVC Piping	PVC piping ranging in diameter from 3/4" to 4"	Cut/Sized and Disposed of in On Site Dumpster

Acronyms

PVC = Polyvinyl chloride

FIGURES

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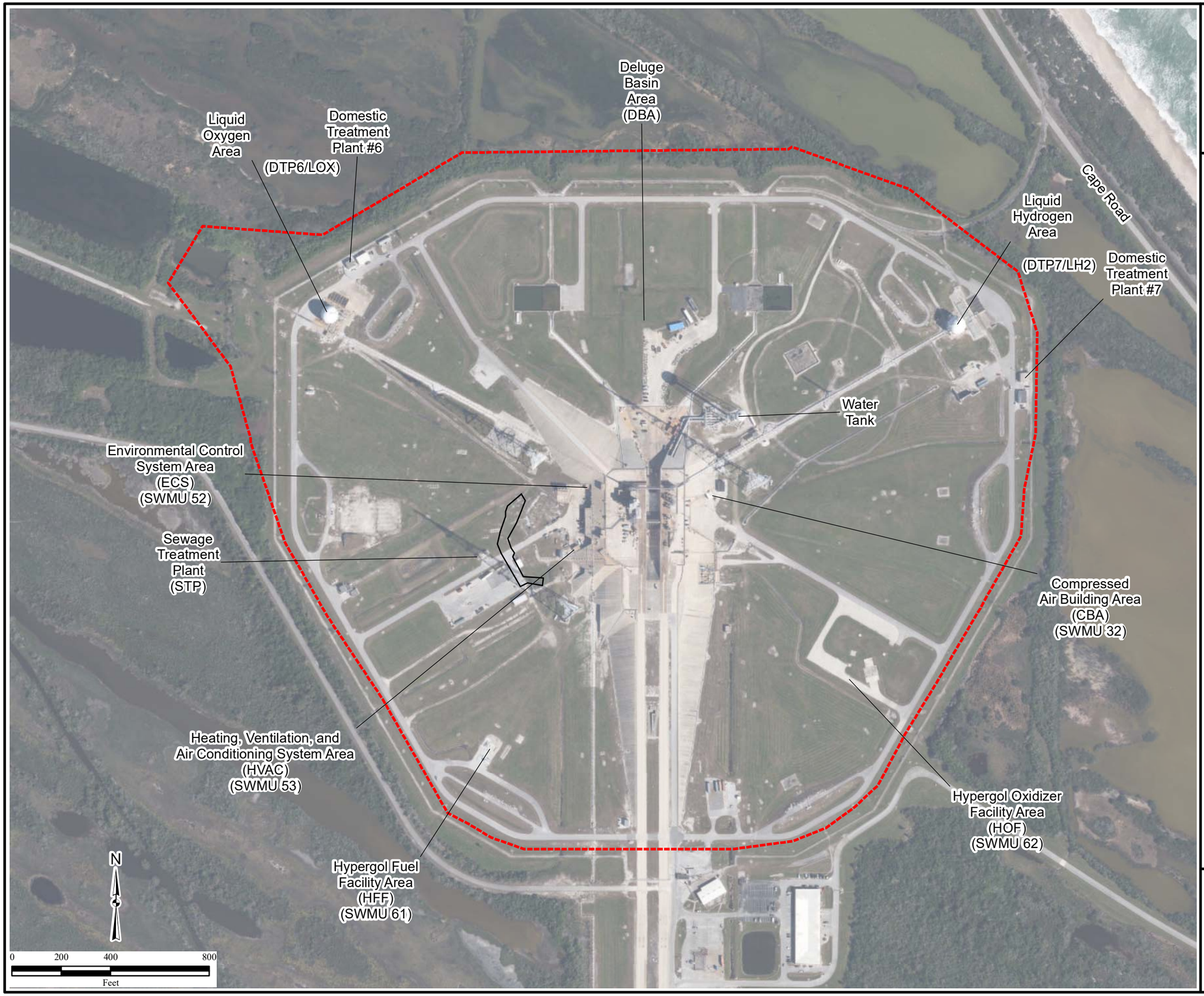
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Source: HGL, NASA
ArcGIS Online Imagery

Legend

- Site Location
- Site Location
- Kennedy Space Center

Figure 1.1
NASA/KSC
Site Locations Map

Figure 1.2
Site Layout
SWMU 009 Launch Complex 39B



Legend

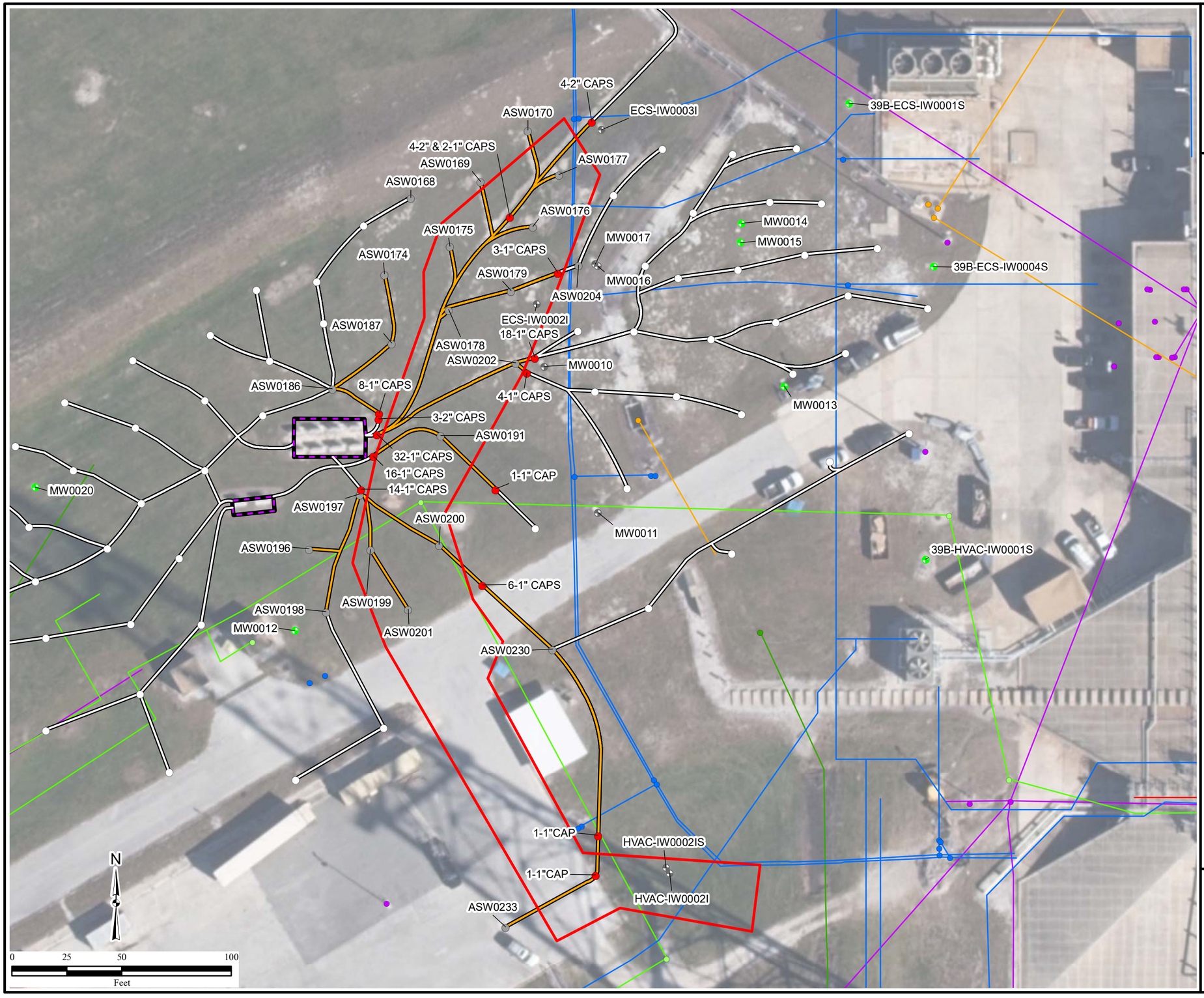
Crane Pad Boundary

SWMU C088 Boundary

Note:
SWMU=solid waste management unit

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Source: HGL,
ArcGIS Online Imagery

Figure 2.1
As-Built Air Sparge Abandonment Layout



Legend

- Abandoned Air Sparge Well
- Cap Point
- Air Sparge Well
- Abandoned Monitoring Well
- Monitoring Well
- Approximate Location of Trenches Containing Air Sparge Piping
- Approximate Location of Trenches Containing Capped Air Sparge Piping
- Approximate Footprint of Concrete Manifold
- TelecomDataset
- WaterDistribution
- Stormwater
- Sewer
- GasFuels
- ElectricDataset
- Construction Operations Footprint

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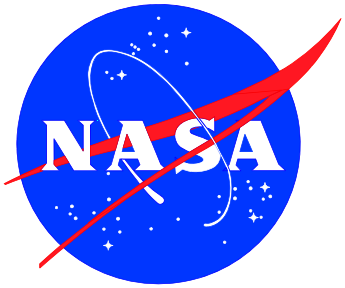
APPENDIX A

AIR SPARGE SYSTEM CONSTRUCTION COMPLETION REPORT

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LAUNCH COMPLEX 39B (SWMU 009)
AIR SPARGE CONSTRUCTION COMPLETION REPORT
KENNEDY SPACE CENTER, FLORIDA

Prepared for:



National Aeronautics and Space Administration
Kennedy Space Center, Florida

November 2017
Revision 0

Prepared by:

Geosyntec Consultants
6770 South Washington Ave, Suite 3
Titusville, Florida 32780
(321) 269-5880

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CERTIFICATION AND APPROVAL

I hereby certify that in my professional judgment this document entitled: *Launch Complex 39B (SWMU 009) Air Sparge Construction Completion Report* generally satisfies the requirements set forth in Chapter 471, Florida Statutes. I have completed and/or been in responsible charge of work completed by qualified professionals working directly under my supervision.

11/17/17

Michael S. Burcham, P.E./Date
Geosyntec Consultants, Inc.
Telephone: (281) 810-5055



11/17/17

Rebecca C. Daprato, Ph.D., P.E./Date
Florida Professional Engineer No. 69809
10777 Westheimer Rd STE 900
Houston, TX 77042
Geosyntec Consultants, Inc.
Certificate of Authorization No. 4321
Telephone: (281) 810-5059

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Appendix D	Laboratory Analytical Results (Furnished on CD)
Appendix E	RIS Completion Tickets (Furnished on CD)
Appendix F	Permits (Furnished on CD)
Appendix G	Waste Manifests (Furnished on CD)
Appendix H	Daily Construction Reports (Furnished on CD)
Appendix I	Compaction Testing and Concrete Compressive Strength Testing (Furnished on CD)
Appendix J	Load Tickets (Furnished on CD)
Appendix K	O&M Manual (Furnished on CD)
Appendix L	Air Compressor System Checkout (Furnished on CD)
Appendix M	O&M Forms (Furnished on CD)

ABBREVIATIONS AND ACRONYMS

ADP	Advanced Data Package
AEL	Advanced Environmental Laboratories, Inc.
AES	Analytical Environmental Services
CCR	Construction Completion Report
CMD	Corrective Measures Design
CMS	Corrective Measures Study
cDCE	*cis*-1,2-dichloroethene
CVOC	chlorinated volatile organic compound
DPT	direct push technology
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
ft	foot
ft BLS	feet below land surface
gal	gallon
Geosyntec	Geosyntec Consultants
GPR	ground-penetrating radar
GCTL	Groundwater Cleanup Target Level
GPI	Groundwater Protection
HASP	Health and Safety Plan
HCP	High Concentration Plume
HDPE	high-density polyethylene
hp	horsepower
HS1	Hot Spot 1
HS2	Hot Spot 2
HMI	human-machine interface
IWP	Implementation Work Plan
IM	interim measures
IMWP	Interim Measures Work Plan
IDW	investigation derived waste
KSC	Kennedy Space Center
KSCRT	KSC Remediation Team
LC39B	Launch Complex 39B
LOX	liquid oxygen
MOT	Maintenance of Traffic
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
MAEE	Mid-Atlantic Environmental Equipment, Inc.

Mil-Con	MIL-CON Electric Company
NADC	Natural Attenuation Default Concentration
10xNADC	ten times NADC
NASA	National Aeronautics and Space Administration
NPDES	National Pollutant Discharge Elimination System
NEMA	National Electrical Manufacturer's Association
OEL	Occupational Exposure Limits
O&M	operation and maintenance
ppmv	parts per million by volume
PID	photoionization detector
psi	pounds per square inch
PVC	polyvinyl chloride
P&ID	Process and Instrumentation Diagram
PLC	programmable logic control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RIS	Remediation Information System
scfm	standard cubic feet per minute
SDR	standard-dimension ratio
SWMU	Solid Waste Management Unit
SWPPP	Storm Water Pollution Prevention Plan
THA	Task Hazard Analysis
TCLP	Toxicity Characteristic Leaching Procedure
TCE	trichloroethene
USGS	United States Geological Survey
VC	vinyl chloride

EXECUTIVE SUMMARY

This document presents the construction completion details for the installation of an air sparge system as an Interim Measure (IM) at Launch Complex 39B and provides details on pre-IM activities, air sparge system installation activities, air sparge system startup, and air sparge system Month 1 operation. The air sparge IM was designed to treat chlorinated volatile organic compound groundwater impacts present in site groundwater at concentrations greater than their respective Florida Department of Environmental Protection Natural Attenuation Default Concentrations.

The following activities were performed prior to IM implementation to establish pre-IM conditions: (i) performance monitoring well installation; (ii) baseline sampling of performance monitoring wells; (iii) baseline air sampling; and (iv) a baseline survey of the ventilation tunnel. Thirty-one monitoring wells were installed, and 37 monitoring wells were sampled during baseline performance monitoring. Baseline air samples were collected from multiple locations across the site and within the ventilation tunnel located within the treatment area. The baseline air sampling results indicated that trichloroethene (TCE), *cis*-1,2-dichloroethene (cDCE), and vinyl chloride (VC) were detected below their respective Lowest Occupational Exposure Limits (OELs). A baseline survey of the ventilation tunnel was conducted, which included the collection of water samples from standing water that was present in the ventilation tunnel. No major cracks were identified during the survey of the ventilation tunnel and TCE, cDCE, and VC were not detected in the water samples.

The air sparge system installation activities were conducted from January through June 2017 and included: (i) installation of 279 air sparge wells; (ii) procurement and installation of a 100-horsepower air compressor system; (iii) installation of 32 air distribution manifolds; (iv) installation of high-density polyethylene piping to convey air from the air compressor system to the air distribution manifolds and ultimately to the individual air sparge wells. The air sparge system was started in June 2017 and operation and maintenance (O&M) activities occurred weekly for the first month of operation. O&M activities included collecting air sparge system readings, collecting air samples, and completing ventilation tunnel surveys. The O&M activities indicated that the system was generally operating as designed. The post start-up air sampling results indicated that TCE, cDCE, and VC were detected below their respective Lowest OELs, and the ventilation tunnel surveys found no observable air sparge system impacts on the ventilation tunnel. Additionally, TCE, cDCE, and VC were not detected in the water samples collected during the ventilation tunnel survey.

The path forward for the air sparge system operation includes monitoring the system weekly via telemetric monitoring, performing O&M activities monthly, and completing performance monitoring activities quarterly.

SECTION I

INTRODUCTION

1.1 OVERVIEW

This document presents the construction completion details for the installation of the air sparge system associated with the Air Sparge Implementation Work Plan (IWP) [National Aeronautics and Space Administration (NASA) 2017a] at Launch Complex 39B (LC39B), located at the John F. Kennedy Space Center (KSC), Florida. The LC39B area has been designated Solid Waste Management Unit Number 009 (SWMU 009) under KSC's Resource Conservation and Recovery Act (RCRA) Corrective Action Program. This report was prepared by Geosyntec Consultants (Geosyntec) for NASA under contract number NNK16CA30T/NNK12CA13B and Project Control Number ENV 1644. An Advanced Data Package (ADP) presentation of the elements of this Construction Completion Report (CCR) was presented to the KSC Remediation Team (KSCRT) at the October 2017 Meeting [NASA 2017c], and the meeting minutes are included in Appendix A.

1.2 PURPOSE

This Air Sparge CCR presents a summary of the construction activities associated with the installation and start-up of the air sparge system at LC39B. The air sparge implementation was completed as an interim measure (IM) and the design details for the air sparge system are provided in the Air Sparge IWP [NASA 2017a].

1.3 CONSTRUCTION COMPLETION REPORT ORGANIZATION

The remainder of this CCR is organized as follows:

Section II: *Background* – This section provides a brief description of the site setting and history of LC39B, summarizes the IM objective, and provides a summary of pre-IM and IM activities completed.

Section III: *Pre-Interim Measures Activities and Results* – This section provides details regarding the performance monitoring well installation, baseline monitoring well sampling, permitting activities, and pre-IM site surveys.

Section IV: *Air Sparge System Infrastructure Installation* – This section provides details of the installation of the air sparge system infrastructure, including the air sparge wells, system piping, air distribution manifolds, as well as modifications from the IWP.

Section V: *Air Compressor System Procurement and Installation* – This section provides details of the air compressor system design and installation, electrical connection, checkout and acceptance, and modifications from the IWP.

Section VI: *Air Sparge System Startup and Operation* – This section provides details of the air sparge system startup and operation through Month 1.

Section VII: *Summary and Recommendations* – This section provides a summary of the air sparge system installation and recommendations on the path forward.

Section VIII: *References* – This section provides the references for the citations in this report.

SECTION II

BACKGROUND

2.1 OVERVIEW

This section presents a brief site history, a summary of the constituents of concern, a brief description of the air sparge system design, the IM objective, a summary of pre-IM and IM activities completed, and health and safety actions completed during the IM implementation. Further details of the air sparge system installation are provided in Sections IV and V.

2.2 LOCATION

LC39B is a National Historic Site located within KSC on the east-central Atlantic Coast of Florida in Brevard County. The site is a NASA operated facility that encompasses approximately 170 acres, and is the northernmost of the two-former space shuttle launch sites situated along the eastern boundary of KSC (Figure 2-1). Figure 2-2 presents the United States Geological Survey (USGS) 7.5-minute Wilson OE East, Wilson, and False Cape Topographic Quadrangle Map that shows LC39B is located within Section 28 and Section 33 of Township 21S, Range 37E.

2.3 SITE HISTORY

The LC39B area was developed in the mid-1960s to support launch activities, which started in 1969 and continued through 2007 (when space shuttle operations ceased at LC39B). In 2010 the flight service structure was removed to create a "clean pad" to allow multiple types of launch vehicles to utilize LC39B. Launch activities are expected to recommence at LC39B in 2020.

2.4 BACKGROUND

During the RCRA Facility Investigation (RFI) [NASA 2000; NASA 2003a; NASA 2003b] and additional field investigations, trichloroethene (TCE), *cis*-1,2-dichloroethene (cDCE), and vinyl chloride (VC) were identified as the principal contaminants present in site groundwater. A Corrective Measures Study (CMS) [NASA 2004] was completed and the cleanup strategy selected was enhanced bioremediation using biostimulation and bioaugmentation with aquifer buffering and recirculation for the area with TCE concentrations greater than 300 micrograms per liter [µg/L]), coupled with Long Term Monitoring LTM for the Low Concentration Plume (area with TCE concentrations less than 300 µg/L and chlorinated volatile organic compound (CVOC) concentrations greater than their respective FDEP Groundwater Cleanup Target Levels [GCTLs]).

A summary of the bioremediation design and implementation and the LTM sampling are

provided in the Corrective Measures Design (CMD) [NASA 2005], Construction Completion and Corrective Measures Report [NASA 2007], 2008 Annual Groundwater Monitoring Report: Summary of Injection Activities, Performance Monitoring, and Monitored Natural Attenuation [NASA 2009], and 2014 Annual Groundwater Monitoring Report: Summary of Performance Monitoring, Monitored Natural Attenuation, and Operation and Maintenance Activities [NASA 2015]. The CVOC concentrations in both the area where bioremediation was implemented and the area where LTM was implemented were not decreasing as anticipated and shuttle operations (which had previously hindered working in the area) were terminated at LC39B, so supplemental assessment activities were initiated in 2008 and continued through 2015. In addition, a baseline reassessment was performed at the site to identify the absence or presence of groundwater, surface water, sediment, and soil impacts [NASA 2014].

After completion of the supplemental assessment and baseline reassessment activities, the KSCRT multi-step Engineering Evaluation Process was followed. During this process, some of the tasks completed included: (i) delineation of TCE (3,000, 300, and 3 µg/L), cDCE (7,000, 700, and 70 µg/L), and VC (1,000, 100, and 1 µg/L) groundwater impacts; (ii) evaluation of technologies and selection of air sparging as the remedial alternative to address the High Concentration Plume (HCP; area where CVOCs exceeded their respective Natural Attenuation Default Concentration [NADCs]) [NASA 2016a]; and (iii) and preparation of an Air Sparge IM Work Plan (IMWP) [NASA 2016b]. Details on the supplemental assessment and the engineering evaluation process for LC39B are provided in the CMI Progress Report [NASA 2017b]. Using the results from activities completed following the submission of the Air Sparge IMWP (described in Section 2.7), the refined air sparge system design was presented in the Air Sparge IWP [NASA 2017a].

2.5 DESCRIPTION OF REMEDIAL ACTION

The air sparge system was designed to treat CVOC impacts present in the HCP with a focus on the areas where CVOC impacts were greater than 10 times their respective NADCs (10xNADC – also referred to as a “Hot Spot”). The areas where CVOC impacts exceeded their 10xNADCs were Hot Spot 1 (HS1), which is just west of the pad area (TCE and VC) and Hot Spot 2 (HS2), which is near the liquid oxygen (LOX) tank (cDCE and VC).

The air sparge system IM included the installation of 31 monitoring wells and 279 air sparge wells, installation of air conveyance piping, and procurement and installation of a 100 horsepower (hp) oil-injected rotary screw air compressor system. The air sparge system was designed to operate in four zones independently of one-another, with each zone comprised of multiple legs (between two and four legs per zone). Each leg was designed to convey air to up to 33 air sparge wells as once. A detailed description of the air sparge system organization is provided in Section 4.3.1.

2.6 INTERIM MEASURE OBJECTIVES

The IM objective for the air sparge system is to reduce CVOC groundwater impacts present above their respective NADCs to concentrations that facilitate a transition to LTM.

2.7 SUMMARY OF PRE-INTERIM MEASURE AND INTERIM MEASURE ACTIVITIES

Prior to the development of the IWP, field activities were completed to support the refinement of the air sparge system design. Those activities included the:

- installation of 31 monitoring wells (November 2016);
- completion of baseline sampling of the 37 monitoring wells included in the performance monitoring well network (November and December 2016);
- collection and logging of six soil borings across the planned treatment area to evaluate site lithology for potentially low permeability soil (November 2016); and
- completion of a ground-penetrating radar (GPR) survey to identify buried utilities and obstructions in the IM implementation area.

Upon completion of the IWP and pre-construction planning, the IM activities occurred as described below (in chronological order).

- January 2017 – Air sparge well and air sparge piping installations began.
- February 2017 – Air sparge well installation activities completed. Air sparge piping installation activities continued. Air sparge well completion activities began (once the air sparge well installation activities were completed).
- March through May 2017 – Air sparge piping installation and air sparge well completion activities continued.
- June 2017 – Air sparge piping installation and air sparge well completion activities were completed. The air compressor system (housed in a trailer) was delivered to the site, installed, and connected to an on-site power source. The air compressor system checkout was completed and the air sparge system was started.
- July and August 2017 – The air sparge system operated for four weeks and routine operation and maintenance (O&M) activities were completed. A week of down-time between the second and third week of operation occurred to address limited areas of groundwater surfacing in the treatment area.

2.8 HEALTH AND SAFETY SUMMARY

A site-specific Health and Safety Plan (HASP), including a trenching Task Hazard Analysis (THA; created with specific safety procedures for trencher operation), was developed prior to construction activities. Both the HASP and THA were approved by NASA Safety and Innovative Health Applications. During construction activities, an air sampling THA was developed when the scope of work was adjusted to include collecting air samples in the below-ground ventilation tunnel. This THA included specific safety procedures for working in the ventilation tunnel.

Prior to construction activities, “Safety Nuts and Bolts” meetings with Geosyntec representatives and subcontractors were conducted and the information from those meetings was provided to NASA safety. Tailgate safety meetings were performed daily to cover and reiterate pertinent safety topics. The activities associated with the air sparge system installation were completed in a safe manner with no Occupational Safety and Health Administration reportable incidents.

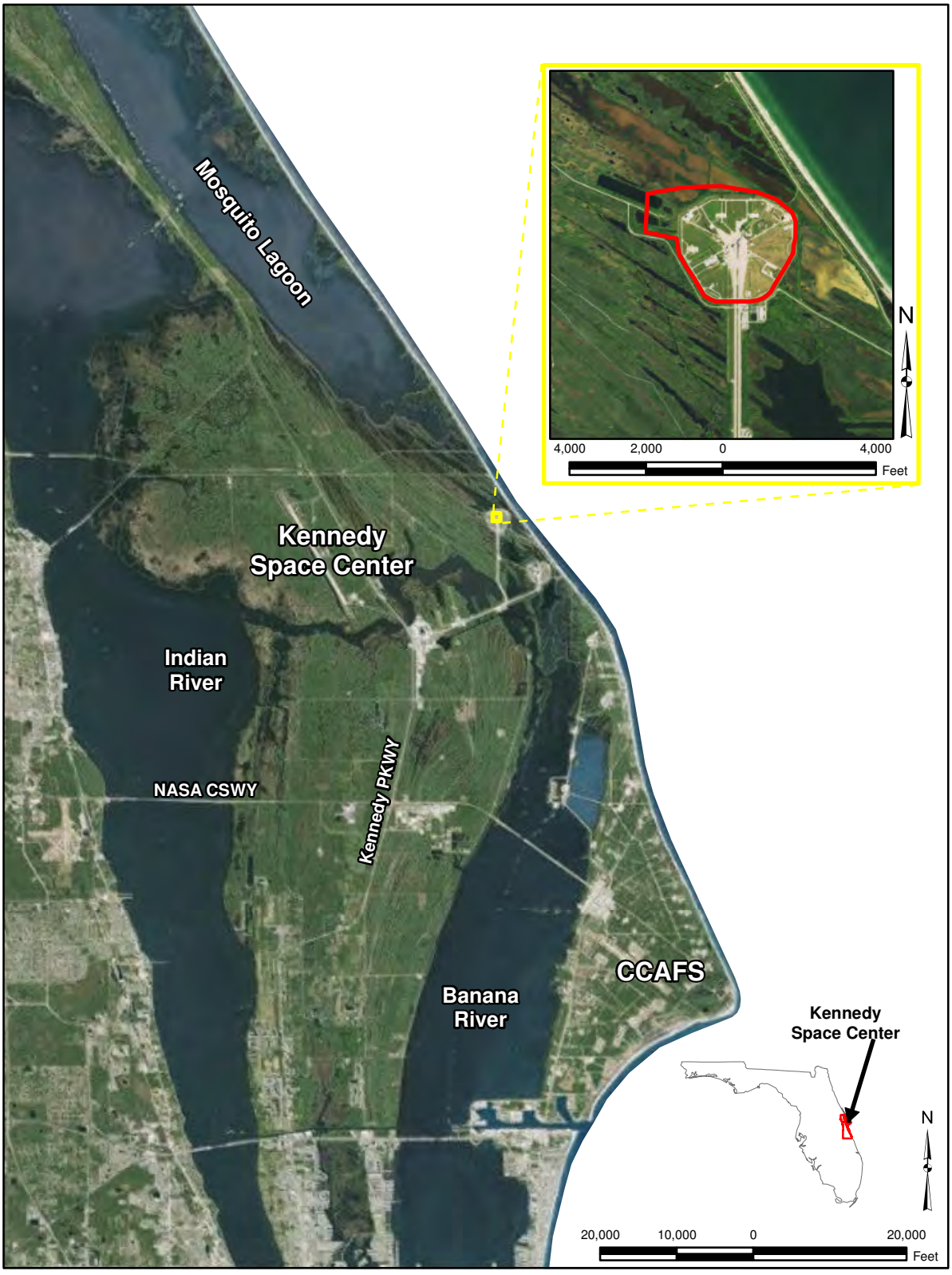


Figure 2-1
Site Location Map

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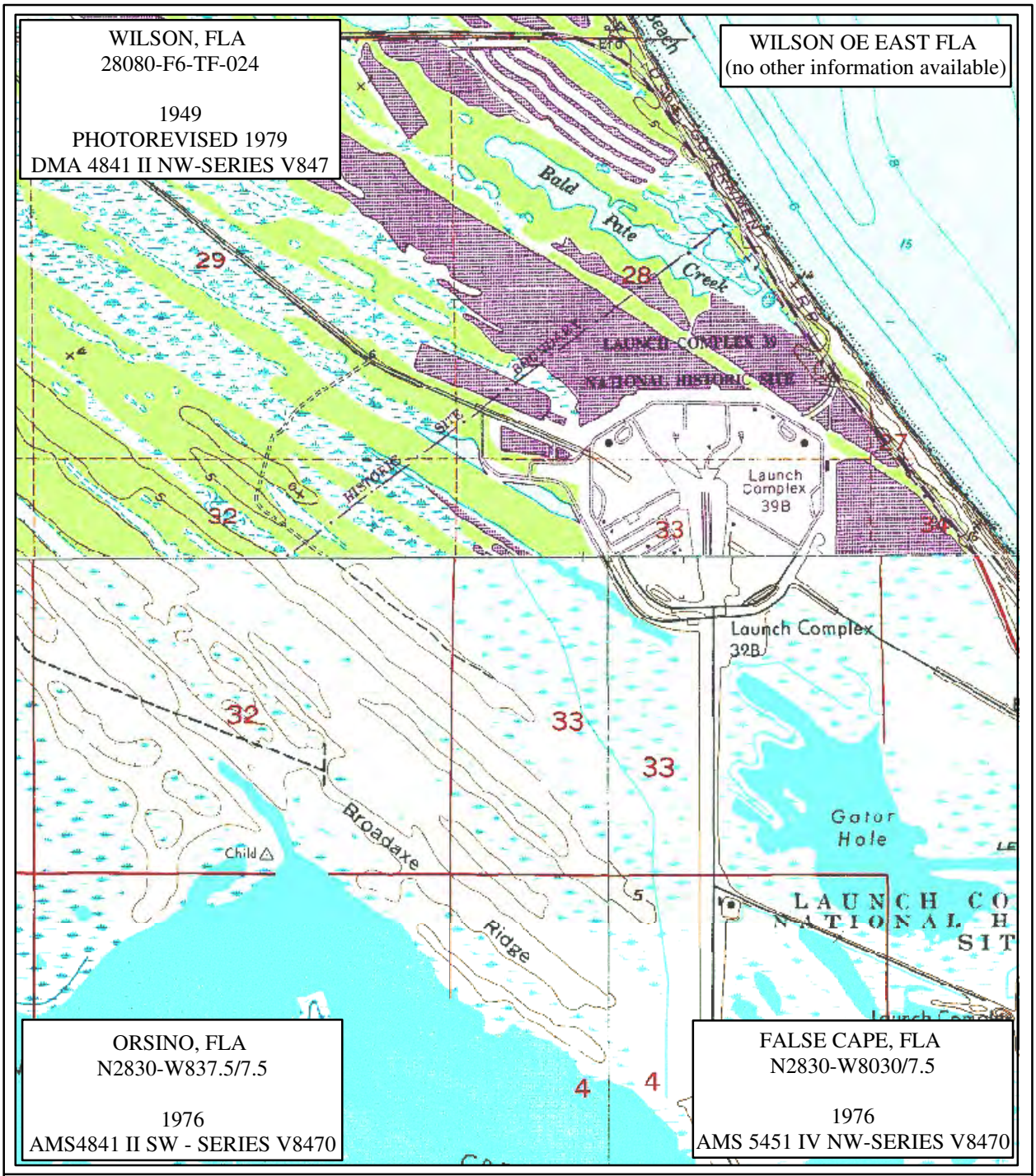


Figure 2-2
USGS Topographic Quadrangle Map

Legend

- Topographic Contour
- Section Line
- Section Line
- Road, paved
- Unimproved Road
- Unimproved Road
- Bathymetric Contour
- Marsh or Swamp
- Water
- Ocean
- Land Feature
- Land Feature

Revisions in shown in purple compiled from aerial photographs taken in 1977 and other source data. This information is not field checked. Map edited in 1979.

N

2,000 1,000 0 2,000 Feet

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SECTION III

PRE-INTERIM MEASURE ACTIVITIES AND RESULTS

3.1 OVERVIEW

This section provides details for pre-IM field activities that were completed at LC39B. These activities included: (i) the installation of 31 air sparge system performance monitoring wells; (ii) the completion of baseline groundwater sampling activities; (iii) the collection of baseline air samples at five locations across the site; and (iv) the completion of a survey of the ventilation tunnel located within the treatment area.

Investigation derived waste (IDW) generated during these field activities consisted of purge and decontamination water from monitoring well installation, development, and sampling. The liquid IDW was staged in properly labeled 55-gallon (gal) drums, which were stored on NASA-provided covered spill pallets secured with cargo straps.

3.2 PERFORMANCE MONITORING WELL INSTALLATION

Performance monitoring well installation activities occurred 14 to 18 and 21 to 23 November 2016, and were conducted by Groundwater Protection (GPI), with oversight by Geosyntec. Thirty-one performance monitoring wells were installed (25 in HS1, six in HS2) using direct push technology (DPT) drilling techniques (Figure 3-1), at 21 locations, with one, two, or three performance monitoring wells installed per location. Monitoring well installation field forms are provided in Appendix B and monitoring well construction logs are provided in Appendix C.

Each performance monitoring well was constructed of 1-inch diameter Schedule 40 polyvinyl chloride (PVC) with a 0.010-inch slotted screen of prepacked 20/30 sand filter pack. Thirty performance monitoring wells were installed with 10-foot (ft) screens, and one performance monitoring well (MW0031) was installed with a 5-ft screen. For each performance monitoring well, a minimum 2-ft 30/65 fine sand seal was installed above the filter pack, and the remaining annular space was grouted to the surface. Single-well locations (12 locations total) were completed with 2-ft x 2-ft x 4-inch thick concrete pads containing 8-inch steel manholes. Two-well locations (eight locations total) were completed with 4-ft x 2-ft x 4-inch thick concrete pads containing two 8-inch manholes (one for each well). One three-well location was completed with a 6-ft x 2-ft x 4-inch thick concrete pad containing three, 8-inch manholes (one for each well). Construction details of the newly installed performance monitoring wells, as well as the other LC39B performance monitoring wells associated with the air sparge system, are presented in Table 3-1. Top-of-casing elevation, ground surface elevation, easting, and northing of the performance monitoring wells were collected by a licensed surveyor. The performance

monitoring wells were developed using a centrifugal pump and were developed until visibly free of particulate matter.

3.3 BASELINE ACTIVITIES

3.3.1 PERFORMANCE MONITORING WELL SAMPLING. Baseline groundwater sampling activities were conducted to establish pre-IM groundwater conditions in the air sparge system treatment area. The baseline groundwater sampling activities were performed from 28 November through 1 December 2016 and included the collection of groundwater samples from the 31 newly installed performance monitoring wells and six previously installed monitoring wells, as listed in Table 3-2. Groundwater sampling field forms are provided in Appendix B.

The groundwater samples were laboratory analyzed for CVOCs using Environmental Protection Agency (EPA) Method 8260B by Advanced Environmental Laboratories, Inc. (AEL), which is National Environmental Laboratory Accreditation Program certified.

Monitoring well purging and sampling activities were conducted in general accordance with FDEP Standard Operating Procedures [FDEP 2014] and the KSC Sampling and Analysis Plan [NASA 2011]. During monitoring well purging, Geosyntec recorded the following parameters at regular intervals: pH, temperature, dissolved oxygen, conductivity, oxidation reduction potential, salinity, total dissolved solids, and turbidity.

3.3.2 AIR SAMPLING. Baseline ambient air sampling activities were conducted to establish pre-IM ambient air conditions in/around the air sparge system implementation area and within a ventilation tunnel installed below grade in the HS1 area. The baseline air samples were collected on 21 June 2017 from the five locations presented on Figure 3-1. Air samples AIR0001 and AIR0003 were collected in the HS1 and HS2 areas, respectively. Air sample AIR0002 was collected near a break area for people working on refurbishing LC39B. Air samples AIR0004 and AIR0005 were collected inside the ventilation tunnel, near the mid-point of the air sparge system and at the eastern end of the ventilation tunnel, respectively. Field forms documenting the air sampling activities are provided in Appendix B.

The air samples were collected using 8-hr SUMMA® canisters that were deployed in the approximate breathing zone at each location. The air samples were analyzed for CVOCs (TCE, cDCE, and VC only) using EPA Method TO-15 by Analytical Environmental Services (AES, which was subcontracted by AEL), which is National Environmental Laboratory Accreditation Conference certified.

3.3.3 VENTILATION TUNNEL SURVEY. Prior to air sparge system startup, a survey of the ventilation tunnel was conducted on 21 June 2017 (during the baseline air sampling), and

field forms documenting the survey are provided in Appendix B. During the survey, the ventilation tunnel was inspected visually (photographs were taken and a photo log is included with the field forms in Appendix B) to develop a pre-IM, baseline condition that could be used to evaluate how the air sparge system's operation may affect the ventilation tunnel. During the survey, indoor air was monitored with both an Ion Science Pho-Check Tiger photoionization detector (PID; for volatile compounds) and a RAE Systems MultiRAE Lite multi-gas meter (oxygen, carbon monoxide, lower explosive limit, and hydrogen sulfide); neither meter recorded readings that were indicative of a potentially hazardous environment (less than 1 part per million measured with the PID).

During the survey, standing water was observed on the floor of the tunnel. To gain an understanding of whether the standing water contained groundwater that was impacted by CVOCs, two samples were collected from two different pools of standing water encountered during the tunnel survey. The water samples were analyzed for CVOCs (TCE, cDCE, and VC only) using EPA Method 8260B by AEL.

3.4 BASELINE ACTIVITIES RESULTS

This section provides a summary of the groundwater and air baseline sampling results. The laboratory analytical results are provided in Appendix D and Remediation Information System (RIS) completion tickets are provided in Appendix E.

3.4.1 PERFORMANCE MONITORING WELL SAMPLING RESULTS. CVOC results from the baseline groundwater sampling activities are provided on Figure 3-2 and Table 3-3 and field geochemical parameters recorded during monitoring well sampling activities are presented in Table 3-4. Historical results are provided for applicable performance monitoring wells.

CVOC concentrations detected from the baseline performance monitoring event were generally lower in concentration than the CVOC concentrations observed during the DPT groundwater sampling activities completed as part of the site characterization activities. The results were anticipated to be lower due to the use of 10-ft screens associated with the monitoring wells (compared to the 4-ft screen used during DPT groundwater sampling). A brief summary of the baseline sampling results is provided below.

- VC was the only CVOC with concentrations detected above its 10xNADC (MW0019 in HS1 and MW0032 in HS2).
- CVOC concentrations (TCE, cDCE, and VC) exceeded their respective NADCs (but not their 10xNADCs) in groundwater samples collected from 19 performance monitoring wells in both HS1 and HS2 areas.

  - VC was detected above its NADC at 17 monitoring wells in both the HS1 and HS2 areas.
  - TCE was detected above its NADC in groundwater samples collected from three monitoring wells located in the HS1 area (MW0013, MW0016, and MW0018).
  - cDCE was detected above its NADC in groundwater samples collected from three monitoring wells located in the HS2 area (MW0032, MW0035, and MW0040).

- Monitoring well MW0015 was the only performance monitoring well location sampled during the baseline sampling event where no CVOCs were detected above their respective GCTLs.

3.4.2 AIR SAMPLING RESULTS. CVOC results from the baseline air sampling activities are provided in Table 3-5.

TCE, cDCE and VC were not detected in air samples collected from locations AIR0001, AIR0002, AIR0003, and AIR0005. TCE and cDCE were detected in the air sample collected from location AIR0004 (14 and 0.87 micrograms per cubic meter [$\mu g/m^3$], respectively). The TCE and cDCE concentrations were converted to parts per million by volume (ppmv; 0.0027 and 0.0002 ppmv respectively), and were below the respective Lowest Occupational Exposure Limits (OELs).

3.4.3 VENTILATION TUNNEL SURVEY RESULTS. The baseline survey of the ventilation tunnel did not identify any major cracks or damage to the tunnel. The photos collected during the baseline ventilation tunnel survey were used to compare to the ventilation tunnel surveys that were performed during the first month of air sparge system operation (see Section 6.7.3). The sampling results from the standing water observed in the tunnel during the inspections are provided in Table 3-6. TCE, cDCE and VC were not detected in the water samples collected during the baseline sampling (June 2017).

3.5 PERMITTING ACTIVITIES

Prior to initiating field work, FECC, Inc., the remedial construction subcontractor, completed a National Pollutant Discharge Elimination Systems (NPDES) and a Storm Water Pollution Prevention Plan (SWPPP) for the LC39B construction area. The NPDES permit was submitted and obtained as a Generic Permit for Stormwater Discharge from Large and Small Construction Activities from the FDEP on 20 December 2016. The SWPPP was certified on 15 December 2016 and provided to Geosyntec. These permits are provided in Appendix F.

Also, prior to starting construction activities on site, a survey of the construction area near identified wetlands (northwest corner of the LC39B area) was not conducted by KSC employees

because no clearing activities were being proposed. Geosyntec employees were instructed to contact the KSC Environmental Department if any potentially sensitive environmental conditions (e.g. gopher tortoise holes) were identified.

Table 3-1. Monitoring Well Construction Details
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 0009

Location	Easting (m)	Northing (m)	Well Diameter (inches)	Total Well Depth (ft BLS)	Well Screen Interval (ft BLS)	Sand Pack Interval (ft BLS)	Seal Interval (ft BLS)	Grout Interval (ft BLS)	Top of Casing Elevation (ft)	Ground Surface (ft)	Surface Completion Type	Well Completion Date
ESC-IW0004I	236859.440	475797.182	2	47	41.5 to 46.5	39 to 47	36 to 39	0.3 to 36	5.65 *	5.8 *	Below Grade	7/22/1998
ESC-IW0005I	236843.581	475800.995	2	47.5	42 to 47	39 to 47.5	37 to 39	0.8 to 37	5.77	5.9	Below Grade	8/27/1999
ESC-IW0006I	236791.195	475838.074	2	38	32.5 to 37.5	30 to 38	28 to 30	0.8 to 28	5.35	5.4	Below Grade	9/2/1999
ESC-IW0008I	236781.713	475884.109	2	48	42.5 to 47.5	41 to 48	39 to 41	0.8 to 39	4.20	4.4	Below Grade	9/9/1999
LOX-TA0002S	236577.685	476041.898	1	18	8 to 18	8 to 18	5 to 8	2 to 5	5.04	5.3	Flush Mount	12/21/2005
LOX-TA0004S	236625.366	475982.894	1	181	8 o 18	8 to 18	5 to 8	2 to 5	6.23	6.5	Flush Mount	12/20/2005
MW0010	236907.396	475763.358	1	32.05	21.8 to 31.8	21.8 to 31.8	19.8 to 21.8	0.3 to 19.8	6.73	6.9	Flush Mount	11/14/2016
MW0011	236914.980	475743.046	1	50.25	40 to 50	40 to 50	38 to 40	0.3 to 38	7.55	7.6	Flush Mount	11/14/2016
MW0012	236873.173	475726.595	1	50.25	40 to 50	40 to 50	38 to 40	0.7 to 38	7.15	7.2	Flush Mount	11/15/2016
MW0013	236940.982	475760.772	1	26.25	16 to 26	16 to 26	14 to 16	0.7 to 14	9.97	10.1	Flush Mount	11/15/2016
MW0014	236934.881	475782.193	1	26.25	16 to 26	16 to 26	14 to 16	0.7 to 14	7.93	8.1	Flush Mount	11/15/2016
MW0015	236934.772	475781.811	1	36.65	26.4 to 36.4	26.4 to 36.4	24.4 to 26.4	0.7 to 24.4	7.89	8.1	Flush Mount	11/15/2016
MW0016	236914.947	475777.210	1	30.25	20 to 30	20 to 30	18 to 20	0.7 to 18	6.23	6.4	Flush Mount	11/18/2016
MW0017	236914.570	475777.509	1	40.25	30 to 40	30 to 40	28 to 30	0.7 to 28	6.23	6.4	Flush Mount	11/18/2016
MW0018	236871.801	475777.223	1	30.25	20 to 30	20 to 30	18 to 20	0.67 to 18	5.44	5.6	Flush Mount	11/18/2016
MW0019	236871.417	475776.967	1	40.25	30 to 40	30 to 40	28 to 30	0.7 to 28	5.39	5.6	Flush Mount	11/18/2016
MW0020	236836.854	475746.315	1	50.25	40 to 50	40 to 50	38 to 40	0.7 to 38	5.01	5.2	Flush Mount	11/18/2016
MW0021	236827.237	475777.151	1	30.25	20 to 30	20 to 30	18 to 20	0.7 to 18	5.27	5.5	Flush Mount	11/18/2016
MW0022	236826.750	475776.822	1	40.25	30 to 40	30 to 40	28 to 30	0.7 to 28	5.19	5.5	Flush Mount	11/18/2016
MW0023	236826.199	475776.472	1	50.25	40 to 50	40 to 50	38 to 40	0.7 to 38	5.25	5.5	Flush Mount	11/18/2016
MW0024	236820.263	475794.105	1	40.25	30 to 40	30 to 40	28 to 30	0.7 to 28	5.46	5.7	Flush Mount	11/18/2016
MW0025	236819.776	475793.730	1	50.25	40 to 50	40 to 50	38 to 40	0.7 to 38	5.49	5.7	Flush Mount	11/18/2016
MW0026	236786.614	475807.493	1	40.25	30 to 40	30 to 40	28 to 30	0.7 to 28	5.3	5.4	Flush Mount	11/17/2016
MW0027	236786.950	475807.190	1	50.25	40 to 50	40 to 50	38 to 40	0.7 to 38	5.38	5.4	Flush Mount	11/18/2017
MW0028	236826.195	475826.329	1	50.25	40 to 50	40 to 50	38 to 40	0.7 to 38	5.62	5.7	Flush Mount	11/18/2016
MW0029	236832.673	475865.058	1	40.25	30 to 40	30 to 40	28 to 30	0.8 to 28	3.94	4.2	Flush Mount	11/21/2016
MW0030	236832.228	475865.468	1	50.25	40 to 50	40 to 50	38 to 40	0.7 to 38	3.85	4.2	Flush Mount	11/18/2016
MW0031	236636.444	475953.546	1	15.25	10 to 15	10 to 15	8 to 10	0.7 to 8	6.28	6.3	Flush Mount	11/18/2016
MW0032	236656.944	475988.426	1	18.25	8 to 18	8 to 18	6 to 8	0.7 to 6	5.62	5.7	Flush Mount	11/18/2016
MW0033	236778.156	475935.354	1	46.25	36 to 46	36 to 46	33.5 to 36	0.8 to 33.5	5.89	5.9	Flush Mount	11/21/2016
MW0034	236614.147	475999.420	1	18.25	8 to 18	8 to 18	4.7 to 8	0.8 to 4.7	5.3	5.5	Flush Mount	11/21/2016
MW0035	236613.929	475998.848	1	28.25	18 to 28	18 to 28	16 to 18	0.8 to 16	5.28	5.5	Flush Mount	11/21/2016
MW0036	236659.903	476045.382	1	30.25	20 to 30	20 to 30	18 to 20	0.8 to 18	6.97	7.2	Flush Mount	11/22/2016
MW0037	236888.685	475898.544	1	36.25	26 to 36	26 to 36	24 to 26	0.8 to 24	6.37	6.5	Flush Mount	11/22/2016
MW0038	236889.252	475898.224	1	46.25	36 to 46	36 to 46	34 to 36	0.8 to 34	6.38	6.5	Flush Mount	11/22/2016
MW0039	236564.740	476101.543	1	16.25	6 to 16	6 to 16	4 to 6	0.8 to 4	4.34	4.4	Flush Mount	11/23/2016
MW0040	236583.083	476020.243	1	22.25	12 to 22	12 to 22	10 to 12	0.8 to 10	4.52	4.7	Flush Mount	11/23/2016

Notes:

1. Northing and easting are referenced to the Florida State Plane Coordinate System, East Zone North American Datum of 1983.
2. Top of Casing and Ground Surface Elevation are in feet (ft), referenced to the North American Vertical Datum of 1988.
3. Screen slot size is equal to 0.01 inches for all wells.
4. * indicates determined based on well construction log and not actual survey.
5. m indicates meters.
6. ft BLS indicates feet below land surface.
7. All locations have prefix "39B-".

Table 3-2. Air Sparge System Performance Monitoring Plan
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Hot Spot Area	Location	Screen Interval (ft BLS)	Sampling Frequency	Analytical Parameters (Analytical Method)
Hot Spot 1	ESC-IW0004I	41.5 to 46.5	Quarterly	CVOCs (EPA 8260B)
	ESC-IW0005I	42 to 47	Quarterly	
	ESC-IW0006I	32.5 to 37.5	Quarterly	
	ESC-IW0008I	42 to 47	Quarterly	
	MW0010	21.8 to 31.8	Quarterly	
	MW0011	40 to 50	Quarterly	
	MW0012	40 to 50	Quarterly	
	MW0013	16 to 26	Quarterly	
	MW0014	16 to 26	Quarterly	
	MW0015	26.4 to 36.4	Quarterly	
	MW0016	20 to 30	Quarterly	
	MW0017	30 to 40	Quarterly	
	MW0018	20 to 30	Quarterly	
	MW0019	30 to 40	Quarterly	
	MW0020	40 to 50	Quarterly	
	MW0021	20 to 30	Quarterly	
	MW0022	30 to 40	Quarterly	
	MW0023	40 to 50	Quarterly	
	MW0024	30 to 40	Quarterly	
	MW0025	40 to 50	Quarterly	
	MW0026	30 to 40	Quarterly	
	MW0027	40 to 50	Quarterly	
	MW0028	40 to 50	Quarterly	
	MW0029	30 to 40	Quarterly	
	MW0030	40 to 50	Quarterly	
	MW0033	36 to 46	Quarterly	
	MW0037	26 to 36	Quarterly	
	MW0038	36 to 46	Quarterly	
Hot Spot 2	LOX-TA0002S	8 to 18	Quarterly	CVOCs (EPA 8260B)
	LOX-TA0004S	8 to 18	Quarterly	
	MW0031	10 to 15	Quarterly	
	MW0032	8 to 18	Quarterly	
	MW0034	8 to 18	Quarterly	
	MW0035	18 to 28	Quarterly	
	MW0036	20 to 30	Quarterly	
	MW0039	6 to 16	Quarterly	
	MW0040	12 to 22	Quarterly	

Notes:

1. ft BLS indicates feet below land surface.
2. CVOC indicates chlorinated volatile organic compounds.
3. Year 1 sample frequency presented.
4. EPA indicates Environmental Protection Agency.
5. All locations have prefix "39B-".

Table 3-3. Air Sparge System Performance Monitoring Results: Chlorinated Volatile Organic Compounds
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Location	Sample Date	Screen Interval (ft BLS)	Concentration (µg/L)			
			TCE	cDCE	tDCE	VC
		FDEP GCTL	**3**	**70**	**100**	**1**
		FDEP NADC	**300**	**700**	**1000**	**100**
ECS-IW0004I	07/31/1998	41.5 to 46.5	**10 U**	**170**	9.0 U	**1,000**
	07/22/1999		**40 U**	36 U	36 U	**1,200**
	10/16/2000		**12 U**	18 U	12 U	**1,600**
	10/20/2003		0.78 J	18.3	18.0	**2,110**
	01/06/2006		0.28 U	0.65 U	12.0	**1,900**
	09/20/2007		**10 U**	13 U	8.8 U	**1,200**
	09/01/2008		0.32 U	0.56	12.6	**481**
	09/09/2009		0.33 I	0.43 I	15.2	**262**
	10/14/2010		0.24 I	0.48 I	12.1	**196**
	12/01/2016		0.29 U	1.4	6.6	**20.0**
ECS-IW0005I	07/22/1999	42 to 47	**40 U**	24 U	16 U	**3,200**
	10/12/2000		**16 U**	**184 J**	200 U	**2,500**
	10/20/2003		**200 U**	**240**	36 U	**4,700**
	04/28/2004		**10 U**	**199**	13.3	**3,710**
	01/06/2006		0.28 U	0.65 U	12.0	**690**
	09/20/2007		**25.0 U**	33 U	22 U	**2,800**
	09/01/2008		0.32 U	2.1	13.5	**1,330**
	09/09/2009		0.32 U	0.31 I	11.1	**140**
	10/14/2010		0.24 U	0.88 I	10.5	**551**
	12/01/2016		0.29 U	1.6	6.3	**170**
ECS-IW0006I	07/22/1999	32.5 to 37.5	**10 U**	36 I	9.0 U	**580**
	10/12/2000		2.0 U	52.0	2.0 U	**280**
	10/20/2003		**20 J**	45.9	40 U	**923**
	04/28/2004		3.0	9.8	4.2	**1,210**
	01/06/2006		1.1 U	2.6 U	6.0	**920**
	08/06/2006		0.91 I	1.2	6.2	**770**
	05/01/2007		2.5 U	3.3 U	6.2	**590**
	09/20/2007		2.0 U	2.6 U	5.2	**210**
	09/01/2008		0.33	0.33	1.6	**93.8**
	09/09/2009		0.74 I	0.66 I	7.3	**97.2**
	10/14/2010		0.24 U	0.32 U	7.7	**115**
	12/01/2016		0.29 U	1.2	3.4	**8.7**
ECS-IW0008I	07/22/1999	42 to 47	0.20 U,J	0.71 I	0.18 U	**5.8**
	10/12/2000		0.08 U	0.77 I	0.08 U	**10.0**
	10/20/2003		2.0 U	4.6	2.0 U	**45.6**
	01/06/2006		0.28 U	15.0	0.45 U	**130**
	09/20/2007		1.0 U	21.0	0.88 U	**160**
	09/01/2008		0.32 U	38.7	0.45 U	**141**
	09/10/2009		0.64 U	52.0	0.90 U	**222**
	10/14/2010		0.24 U	45.3	0.34 U	**198**
	12/01/2016		0.29 U	59.0	4.3	**170**
LOX-TA0002S	01/12/2006	8 to 18	**3,300**	**920**	46 I	**220**
	05/03/2006		**4,800**	**1,000**	43 I	**110**
	06/22/2006		**5,100**	**1,100**	47.0	**290**
	08/06/2006		**1,100**	**880**	29.0	**550**
	10/27/2006		**5,300**	**1,000**	42.0	**100**
	01/17/2007		**3,600**	**860**	33.0	**140**
	04/12/2007		**5,100**	**1,100**	38.0	**130**
	08/01/2007		**3,800**	**1,100**	8.8 U	**10 U**
	09/25/2007		**3,400**	**1,100**	32.0	**240**
	11/08/2007		**2,300**	**1,500**	50 U	**170**
	09/09/2008		**3,490**	**1,780**	48.9	**429**
	12/16/2008		**3,340**	**2,330**	54.0	**484**
	03/09/2009		**2,000**	**2,380**	41 I	**378**
	06/15/2009		**1,600**	**2,040**	40 I	**341**
	09/10/2009		1.8	**223**	6.0	**74.1**
	12/18/2009		**9.3 I**	**1,330**	15 I	**216**
	03/04/2010		**7.7 I**	**1,230**	16 I	**230**
	06/02/2010		2.4 U	**638**	11.3	**351**
	09/22/2010		2.5	**100**	7.9	**523**
	12/21/2010		**15.9**	**76.3**	6.0	**235**
	03/08/2011		**19.5**	**152**	6.8	**182**
	09/27/2011		**11.1**	70.2	6.8	**114**
	09/24/2012		**7.8**	23.9	16.5	**103**
	10/22/2013		**9.4**	15.2	11.8	**42.8**
	10/23/2014		**9.2**	16.1	11.0	**48.2**
	12/01/2016		3.2	16.0	9.0	**39.0**

Table 3-3. Air Sparge System Performance Monitoring Results: Chlorinated Volatile Organic Compounds
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Location	Sample Date	Screen Interval (ft BLS)	Concentration (µg/L)			
			TCE	cDCE	tDCE	VC
		FDEP GCTL	**3**	**70**	**100**	**1**
		FDEP NADC	**300**	**700**	**1000**	**100**
LOX-TA0004S	01/12/2006	8 to 18	**15.0**	**130**	7.4	**110**
	05/03/2006		**5.0**	**100**	7.9	**110**
	06/22/2006		2.1	6.6	3.2	**34.0**
	08/06/2006		0.50 U	6.2	3.0	**21.0**
	10/27/2006		**12.0**	**76.0**	12.0	**220**
	01/19/2007		**8.7**	3.1	5.0	**650**
	04/16/2007		1.7	18.0	9.8	**150**
	07/25/2007		1.1	35.0	9.0	**170**
	09/25/2007		**6.9**	**97.0**	17.0	**710**
	11/08/2007		1.0 U	1.5	4.7	**15.1**
	09/09/2008		**75.6**	**122**	20.0	**5.6**
	12/16/2008		**6.9**	**83.7**	20.6	**309**
	03/09/2009		**3.6**	50.8	19.1	**339**
	06/16/2009		2.2	28.7	10.4	**209**
	09/10/2009		1.5	15.1	12.1	**218**
	12/17/2009		1.1	12.5	8.8	**247**
	03/03/2010		1.7	22.1	12.8	**195**
	06/02/2010		1.2 U	19.3	9.9	**359**
	09/22/2010		**5.7**	37.4	5.5	**91.6**
	12/21/2010		**4.5**	27.0	1.9	**101**
	03/07/2011		1.6	30.0	11.1	**228**
	09/28/2011		2.3	27.3	5.3	**165**
	09/24/2012		0.71 I	20.3	2.1	**125**
	10/22/2013		0.63 U	32.4	1.6 I	**144**
	10/22/2014		0.30 U	1.7	1.5	**78.1**
	12/01/2016		0.29 U	3.7	1.4	**82.0**
MW0010	11/28/2016	21.8 to 31.8	**4.1**	1.7	0.20 U	0.20 U
MW0011	11/28/2016	40 to 50	0.29 U	1.8	15.0	**18.0**
MW0012	11/28/2016	40 to 50	1.6	3.2	5.6	**54.0**
MW0013	11/28/2016	16 to 26	**550**	**180**	28.0	**160**
MW0014	11/29/2016	16 to 26	**4.0**	3.6	3.7	**150**
MW0015	11/29/2016	26.4 to 36.4	0.29 U	0.24 U	0.20 U	0.20 U
MW0016	11/29/2016	20 to 30	**410**	**160**	19.0	**97.0**
MW0017	11/29/2016	30 to 40	2.7	3.4	3.5	**620**
MW0018	11/29/2016	20 to 30	**1,400**	**640**	46.0	**960**
MW0019	11/29/2016	30 to 40	**27.0**	**140**	51.0	**1,500**
MW0020	11/28/2016	40 to 50	0.29 U	4.0	1.5	**240**
MW0021	11/30/2016	20 to 30	2.1	7.4	1.8	**140**
MW0022	11/29/2016	30 to 40	0.29 U	2.1	10.0	**190**
MW0023	11/30/2016	40 to 50	0.58 U	7.2	5.2	**730**
MW0024	11/30/2016	30 to 40	1.7	3.3	15.0	**83.0**
MW0025	11/30/2016	40 to 50	0.29 U	7.2	8.9	**960**
MW0026	11/30/2016	30 to 40	**230**	**430**	59.0	**210**
MW0027	11/30/2016	40 to 50	0.29 U	18.0	9.9	**900**
MW0028	11/30/2016	40 to 50	0.29 U	5.8	2.8	**260**
MW0029	11/30/2016	30 to 40	0.29 U	5.6	1.2	**55.0**
MW0030	11/30/2016	40 to 50	0.29 U	18.0	2.0	**130**
MW0031	11/28/2016	10 to 15	**8.9**	13.0	1.5	0.20 U
MW0032	11/28/2016	8 to 18	2.4	**2,900**	**240**	**2,400**
MW0033	11/28/2016	36 to 46	0.29 U	11.0	0.20 U	**180**
MW0034	11/30/2016	8 to 18	1.4	61.0	6.4	**100**
MW0035	11/30/2016	18 to 28	**13.0**	**770**	64.0	**690**
MW0036	11/28/2016	20 to 30	**180**	36.0	4.3	0.40 U
MW0037	11/30/2016	26 to 36	0.29 U	7.6	3.5	**31.0**
MW0038	11/30/2016	36 to 46	0.29 U	6.7	0.20 U	**6.2**
MW0039	12/01/2016	6 to 16	**11.0**	9.0	0.60 U	0.60 U
MW0040	12/01/2016	12 to 22	**62.0**	**1,500**	80.0	**100**

Notes:

1. µg/L indicates micrograms per liter.
2. ft BLS indicates feet below land surface.
3. U indicates not detected above method detection limit.
4. I indicates result greater than or equal to method detection limit but less than the reporting limit.
5. J indicates estimated value.
6. Bold, yellow shaded text indicates analyte detected above Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Level (GCTL).
7. Bold, orange shaded text indicates analyte detected above FDEP Natural Attenuation Default Concentration (NADC).
8. All locations have prefix "39B-".
9. TCE indicates trichloroethene.
10. cDCE indicates *cis*-1,2-dichloroethene.
11. tDCE indicates *trans*-1,2-dichloroethene.
12. VC indicates vinyl chloride.
13. Baseline groundwater sampling prior to air sparge system startup occurred on28, 29, and 30 November and 1 December 2016.

Table 3-4. Air Sparge System Performance Monitoring Results: Field Geochemical Parameters
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Location	Screen Interval (ft BLS)	Sample Date	Temperature (°C)	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Total Dissolved Solids (g/L)	Color
ECS-IW0003I	45 to 50	09/08/2008	24.9	7.38	1.9	7.0	0.10	-176	0.00	1.2	clear
		09/10/2009	25.8	7.73	2.0	3.1	0.98	-252	0.23	1.3	clear
		10/14/2010	25.1	7.40	1.6	6.4	0.82	-214	1.21	1.1	yellowish
ECS-IW0004I	41.5 to 46.5	09/08/2008	24.9	7.38	1.9	7.0	0.10	-176	0.00	1.2	clear
		09/09/2009	26.4	9.31 *	2.5	2.9	1.22	-360	0.07	1.5	clear
		10/14/2010	26.1	6.71	2.0	8.3	0.96	-172	1.05	1.8	clear
		12/01/2016	22.9	7.60	1.6	6.0	0.82	-61	1.1	1.1	clear
ECS-IW0005I	42 to 47	09/08/2008	25.1	7.90	2.3	4.8	0.10	-151	0.00	1.5	clear/brown
		09/09/2009	25.3	9.10 *	1.9	2.4	0.95	-368	0.10	1.2	clear
		10/14/2010	25.2	7.25	2.3	3.9	0.56	-254	1.03	1.0	clear
		12/01/2016	22.8	7.65	1.8	13.5	0.91	-33	1.0	1.2	clear
ECS-IW0006I	32.5 to 37.5	09/08/2008	24.7	7.77	0.9	8.9	0.00	-297	0.00	0.7	clear
		09/09/2009	27.0	9.60 *	2.3	8.1	1.12	-421	0.01	1.4	clear
		10/14/2010	25.0	7.70	1.3	7.6	0.51	-282	0.98	0.6	clear
		12/01/2016	22.7	7.08	1.5	10.9	0.74	-166	1.0	1.0	clear
ECS-IW0008I	42 to 47	09/08/2008	24.5	7.32	77.4	0.0	4.00	-156	0.00	48.0	--
		09/10/2009	26.1	7.52	25.2	1.8	15.01	-260	0.04	16.1	clear
		10/14/2010	26.0	7.30	20.2	10.3	12.10	-247	1.10	13.1	clear
		12/01/2016	22.9	7.56	7.7	7.1	4.28	-27	0.8	5.0	clear
LOX-TA0002S	8 to 18	11/08/2008	25.6	5.39	1.3	16.5	0.62	-254	0.41	0.8	clear
		09/09/2008	25.6	5.35	1.8	2.4	0.10	-263	0.00	1.1	clear
		12/16/2008	23.8	5.21	1.6	9.1	0.84	-268	0.89	1.1	clear
		03/09/2009	22.1	5.07	1.5	10.2	0.81	-127	0.62	1.0	clear yellow
		06/15/2009	23.9	5.58	1.8	11.7	0.91	-245	0.32	1.2	--
		09/10/2009	25.6	6.24	2.1	8.7	0.20	-246	0.82	1.8	clear
		12/18/2009	24.7	5.74	1.7	22.0	0.84	-277	0.93	1.1	brown, yellow, cloudy
		03/04/2010	20.3	6.03	2.0	7.4	1.05	-279	0.43	1.3	orange
		06/02/2010	25.1	5.81	2.1	8.9	1.06	-291	1.20	1.3	clear
		09/22/2010	26.2	5.47	6.3	2.7	3.41	-175	0.10	4.1	yellow
		12/21/2010	22.9	5.58	11.3	1.1	6.43	-266	1.54	7.3	clear
		03/08/2011	21.3	5.90	12.4	3.6	7.18	-247	0.45	8.1	clear
		09/27/2011	25.5	5.49	12.1	5.7	6.92	-266	0.58	9.9	clear
		09/24/2012	24.9	5.45**	7.0	5.9	3.86	-290	0.79	4.6	clear
		10/22/2013	26.1	5.33	6.9	6.6	3.75	-251	0.50	4.5	clear
		10/23/2014	25.5	5.50	5.3	8.0	2.84	-272	0.20	3.4	clear yellow
		12/01/2016	25.0	4.93	5.8	10.9	3.15	-126	0.5	3.8	clear
LOX-TA0004S	8 to 18	11/08/2007	26.7	6.50	0.8	4.5	0.37	-268	0.65	0.5	light yellow
		09/09/2008	28.3	5.49	0.5	10.7	0.25	-271	0.94	0.3	light brown
		12/16/2008	25.3	7.12	1.0	4.1	0.00	-272	0.61	0.7	clear
		03/09/2009	24.8	5.68	0.4	17.0	0.00	-282	0.00	0.3	yellow
		06/16/2009	26.9	6.20	0.6	9.7	0.30	-248	0.81	0.3	light brown/clear
		09/10/2009	28.5	7.97 *	0.7	11.1	0.34	-367	0.04	0.5	yellow
		12/17/2009	25.5	6.06	0.7	1.9	0.34	-261	0.09	0.5	clear
		03/03/2010	21.8	6.26	0.6	2.4	0.31	-308	0.36	0.4	yellow
		06/02/2010	25.6	6.13	0.7	4.1	0.32	-301	0.42	0.4	yellow
		09/22/2010	28.2	5.98	0.7	7.0	0.35	-171	0.06	0.5	orange
		12/21/2010	24.6	6.20	0.8	4.1	0.41	-274	1.08	0.6	orange
		03/07/2011	21.7	6.28	0.6	6.2	0.31	-183	0.80	0.6	orange
		09/28/2011	27.7	5.90	0.6	8.0	0.30	-175	0.47	0.4	yellow
		09/24/2012	27.5	6.26**	0.6	9.8	0.29	-306	0.69	0.4	amber
		10/22/2013	28.3	5.84	0.5	11.0	0.26	-188	0.45	0.4	yellow
		10/22/2014	27.8	6.03	0.6	11.1**	0.28	-232	0.00**	0.4	yellow
		12/01/2016	27.3	5.90	0.4	5.8	0.21	-119	0.4	0.3	yellow

Table 3-4. Air Sparge System Performance Monitoring Results: Field Geochemical Parameters
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Location	Screen Interval (ft BLS)	Sample Date	Temperature (°C)	pH (S.U.)	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	Oxidation-Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Total Dissolved Solids (g/L)	Color
MW0010	21.8 to 31.8	11/28/2016	24.0	6.47	1.3	16.8	0.65	-275	0.3	0.9	clear
MW0011	40 to 50	11/28/2016	24.2	6.83	1.3	16.1	0.65	-208	0.4	0.8	clear
MW0012	40 to 50	11/28/2016	23.9	6.94	1.1	18.7	0.41	-204	0.4	0.7	clear
MW0013	16 to 26	11/28/2016	25.3	5.99	1.8	19.0	0.92	-243	0.3	1.2	clear
MW0014	16 to 26	11/29/2016	25.8	5.74	1.1	205.0	0.56	-77	0.4	0.7	brown
MW0015	26.4 to 36.4	11/29/2016	25.3	6.36	1.0	4.7	0.50	-57	0.3	0.7	clear
MW0016	20 to 30	11/29/2016	23.9	5.84	1.2	138.0	0.60	-220	0.3	0.8	brown
MW0017	30 to 40	11/29/2016	25.5	6.61	1.2	8.7	0.59	-60	0.8	0.8	clear
MW0018	20 to 30	11/29/2016	23.6	6.07	0.9	209.0	0.42	-186	0.4	0.6	brown
MW0019	30 to 40	11/29/2016	24.6	6.69	1.1	2.7	0.53	-155	0.5	0.7	clear
MW0020	40 to 50	11/28/2016	22.8	8.44	2.5	16.9	1.29	-159	0.3	1.6	clear
MW0021	20 to 30	11/30/2016	23.4	6.36	0.9	146.0	0.47	-230	0.5	0.6	yellow
MW0022	30 to 40	11/29/2016	23.0	7.01	1.2	6.1	0.60	-202	0.9	0.8	clear
MW0023	40 to 50	11/30/2016	24.1	7.59	2.4	15.6	1.25	-5	0.8	1.6	clear
MW0024	30 to 40	11/30/2016	23.5	7.08	1.2	16.1	0.62	-289	0.4	0.8	clear
MW0025	40 to 50	11/30/2016	24.5	7.96	2.8	10.1	1.46	-50	0.4	1.8	clear
MW0026	30 to 40	11/30/2016	23.5	6.75	1.2	110.0	0.61	-310	0.5	0.8	yellow
MW0027	40 to 50	11/30/2016	24.1	8.15	3.4	33.0	1.80	-78	0.4	2.2	yellow
MW0028	40 to 50	11/30/2016	22.9	7.73	3.5	13.9	1.84	-171	0.6	2.3	clear
MW0029	30 to 40	11/30/2016	24.0	7.81	1.4	6.9	0.71	-43	0.4	0.9	clear
MW0030	40 to 50	11/30/2016	23.3	7.59	10.3	8.7	6.31	-181	1.0	7.2	clear
MW0031	10 to 15	11/28/2016	25.1	6.27	0.5	19.2	0.26	-108	1.5	0.4	clear
MW0032	8 to 18	11/28/2016	25.2	7.87	0.6	18.6	0.30	-265	0.5	0.4	clear
MW0033	36 to 46	11/28/2016	23.5	7.60	4.4	18.6	2.32	-179	0.4	2.8	clear
MW0034	8 to 18	11/30/2016	26.1	6.33	0.5	247.0	0.26	-239	0.2	0.3	brown
MW0035	18 to 28	11/30/2016	24.5	5.78	0.3	Out of Range	0.15	-224	0.5	0.2	brown
MW0036	20 to 30	11/28/2016	25.6	6.28	0.4	17.9	0.18	-207	0.5	0.3	clear/tan
MW0037	26 to 36	11/30/2016	25.4	7.39	0.9	14.7	0.45	-124	0.3	0.6	clear
MW0038	36 to 46	11/30/2016	23.9	8.17	2.9	15.9	1.51	-169	0.9	1.9	clear
MW0039	6 to 16	12/01/2016	26.0	5.42	26.9	13.8	16.43	-159	0.2	17.5	clear
MW0040	12 to 22	12/01/2016	25.7	5.20	0.5	292.0	0.25	-142	0.3	0.3	yellow

Notes:

1. ft BLS indicates feet below land surface.
2. °C indicates degrees Celsius.
3. pH indicates hydrogen ion concentration.
4. S.U. indicates standard units.
5. mS/cm indicates milliSiemens per centimeter.
6. NTU indicates Nephelometric Turbidity Unit.
7. mV indicates millivolts.
8. mg/L indicates milligram per liter.
9. % indicates percent.
10. g/L indicates gram per liter.
11. * indicates pH meter malfunctioned.
12. ** indicates the respective meter did not pass the continuing calibration verification at the end of the sampling day.
13. All locations have prefix "39B-".

Table 3-5. Air Sparge System Air Monitoring Results
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Location	Sample Date	Concentration					
		Trichloroethene		*cis* -1,2-Dichloroethene		Vinyl Chloride	
Units		µg/m^3	ppmv	µg/m^3	ppmv	µg/m^3	ppmv
OEL		---	10	---	200	---	1
AIR0001	06/21/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/06/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/13/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/27/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	08/03/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
AIR0002	06/21/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/06/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/13/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/27/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	08/03/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
AIR0003	06/21/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/06/2017	1.1 U	0.0002 U	**1.3**	**0.0003**	**0.69**	**0.0003**
	07/13/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/27/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	08/03/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
AIR0004	06/21/2017	**14**	**0.0027**	**0.87**	**0.0002**	0.51 U	0.0002 U
	07/06/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/13/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/27/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	08/03/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
AIR0005	06/21/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/06/2017	**1.3**	**0.0003**	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/13/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	07/27/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U
	08/03/2017	1.1 U	0.0002 U	0.79 U	0.0002 U	0.51 U	0.0002 U

Notes:

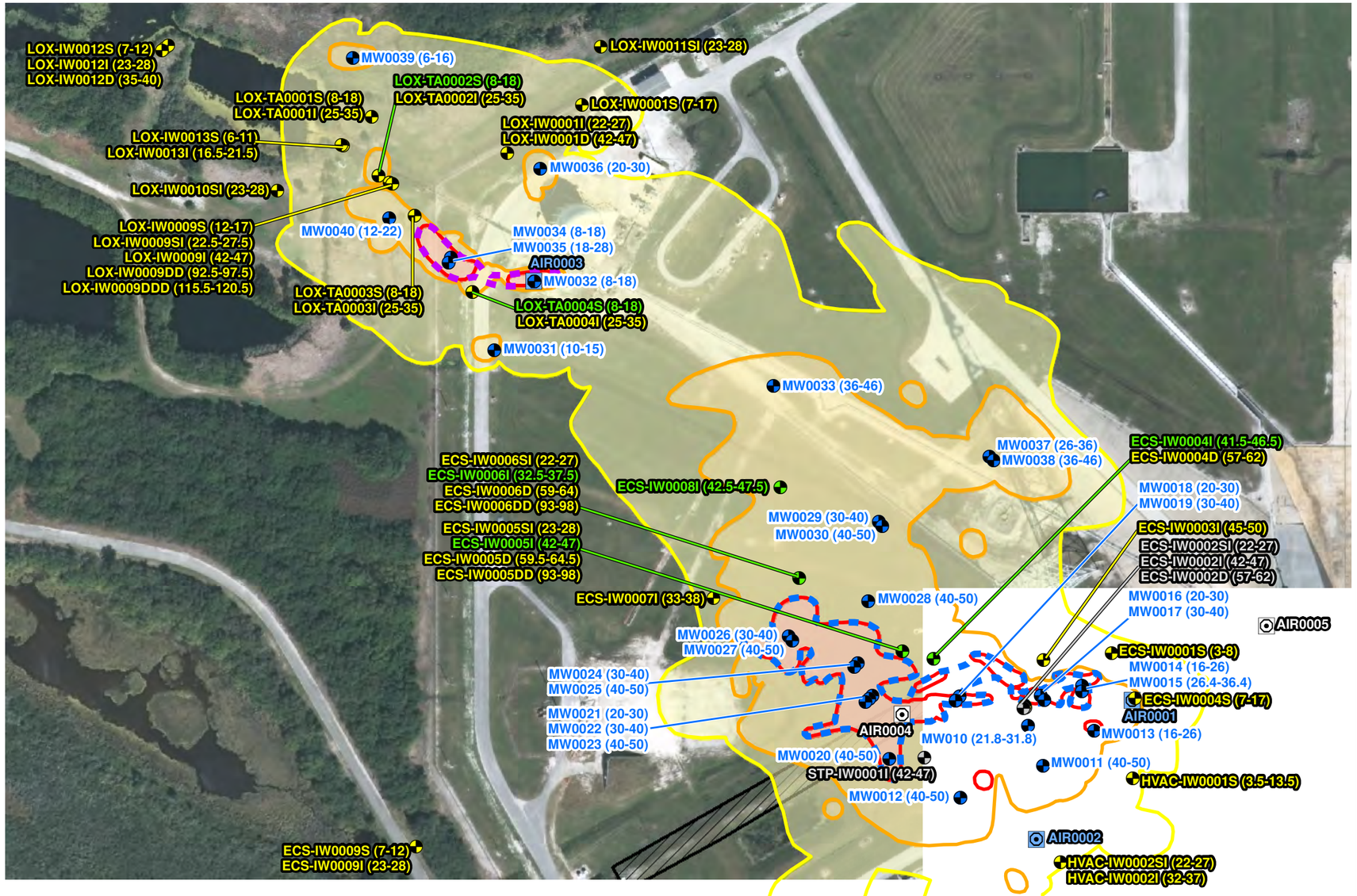
1. OEL indicates Lowest Occupational Exposure Limit.
2. ppmv indicates parts per million by volume.
3. µg/m^3 indicates micrograms per cubic meter.
4. U indicates value was reported as below the reporting limit; therefore the reporting limit is shown.
5. Bold text indicates detected value.
6. All locations have prefix "39B-".
7. Baseline air sampling prior to air sparge system start up occurred on 21 June 2017.

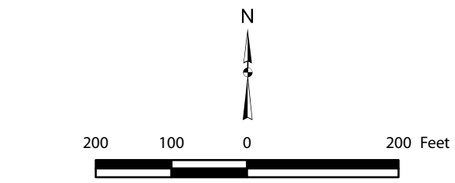
Table 3-6. Ventilation Tunnel Water Sampling Results
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Location	Sample Date	Distance from Western Entrance (ft)	Concentration (µg/L)		
			Trichloroethene	*cis* -1,2-Dichloroethene	Vinyl Chloride
TU0001	06/21/2017	680	0.29 U	0.24 U	0.20 U
	07/06/2014	678	0.29 U	0.24 U	0.20 U
TU0002	06/21/2017	955	0.29 U	0.24 U	0.20 U
TU0003	07/06/2017	890	0.29 U	0.24 U	0.20 U
TU0004	07/13/2017	906	0.29 U	0.24 U	0.20 U
	07/27/2017	905	0.29 U	0.24 U	0.20 U
	08/03/2017	905	0.29 U	0.24 U	0.20 U
TU0005	07/13/2017	723	0.29 U	0.24 U	0.20 U
	07/27/2017	723	0.29 U	0.24 U	0.20 U
	08/03/2017	723	0.29 U	0.24 U	0.20 U

Notes:

1. µg/L indicates micrograms per liter.
2. ft indicates feet.
3. U indicates not detected above method detection limit.
4. The distance to the approximate location from the western entrance where each water sample was collected within the ventilation tunnel was measured from the top edge of the ramp leading down to the tunnel at the western entrance.
5. Samples collected within 10 linear feet of each other were grouped under one sample identification.
6. All locations have prefix "39B-".





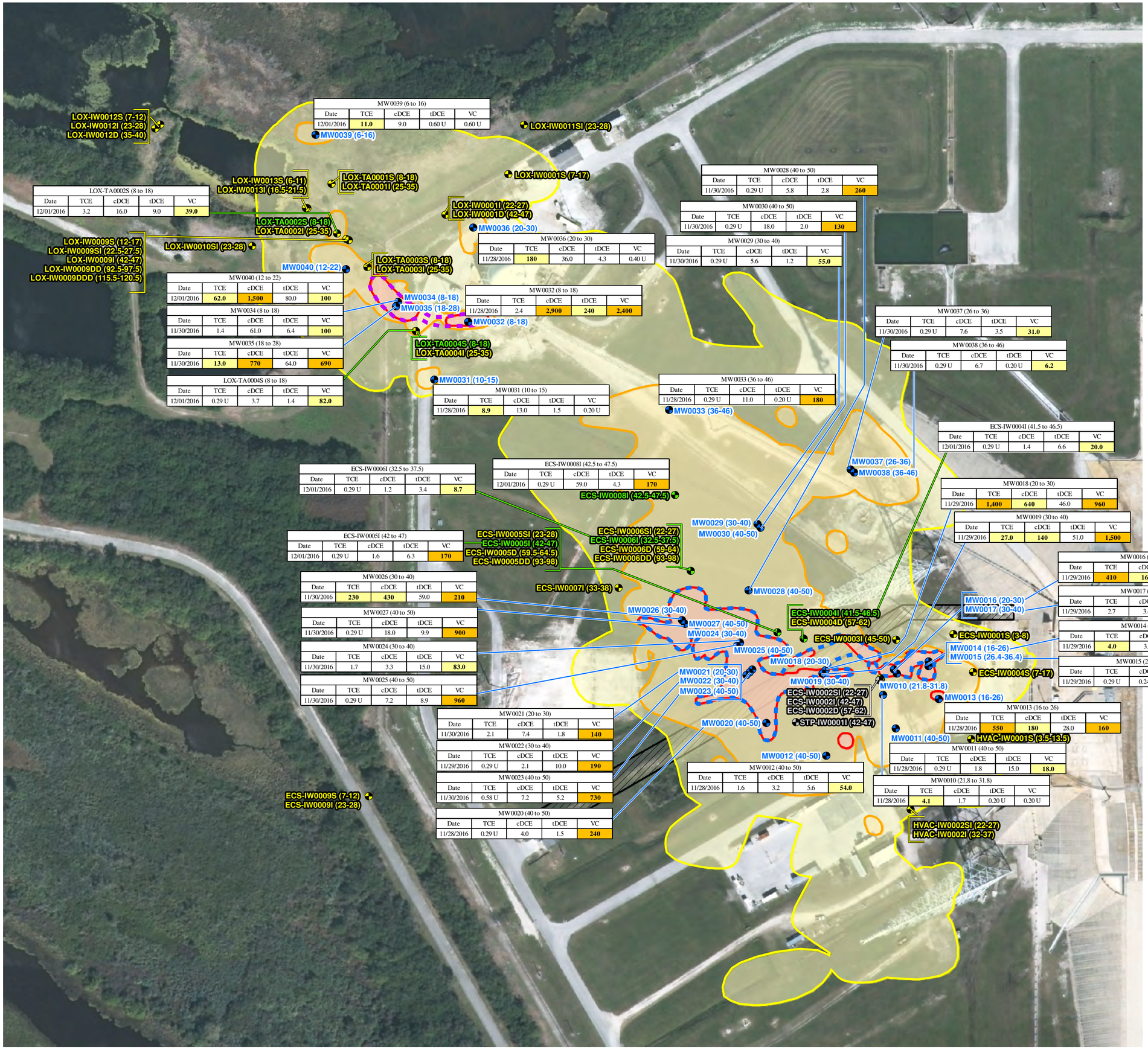
Legend

- Newly Installed Performance Monitoring Well showing screen interval (ft BLS)
- Existing Performance Monitoring Well showing screen interval (ft BLS)
- Existing Monitoring Well (Not Part of Samplling Plan) showing screen interval (ft BLS)
- Abandoned Monitoring Well showing screen interval (ft BLS)
- Approximate Indoor Air Sample Location
- Approximate Outdoor Air Sample Location
- Hot Spot 1 (1.08 acres)
- Hot Spot 2 (0.16 acres)
- Overall 10xNADC Isopleth (1.17 acres)
- Overall NADC Isopleth (8.67 acres)
- Overall GCTL Isopleth (26.62 acres)
- Ventilation Tunnel

Notes:
1. Newly installed monitoring wells were installed in November 2016.
2. ft BLS indicates feet below land surface.
3. NADC indicates the Florida Department of Environmental Protection (FDEP) Natural Attenuation Default Concentration.
4. GCTL indicates FDEP Groundwater Cleanup Target Level.
5. Overall CVOC (chlorinated volatile organic compound) plume composed of overall trichloroethene, *cis*-1,2-dichloroethene, and vinyl chloride plumes.
6. All monitoring well locations have prefix of "39B-".
7. Source of 2015 Aerial, FDOT Surveying and Mapping Office.

Path: (Titusville-01\DATA) T:\FR1352\MXDs\201612_IWP\MW_locs_HS1HS2.mxd 16 November 2017 MAH

Figure 3-1
Performance Monitoring Well and Air Sampling Locations



LOX-TA0002S (8 to 18)				
Date	TCE	cDCE	tDCE	VC
12/01/2016	3.2	16.0	9.0	**39.0**

MW0039 (6 to 16)				
Date	TCE	cDCE	tDCE	VC
12/01/2016	**11.0**	9.0	0.60 U	0.60 U

MW0028 (40 to 50)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	0.29 U	5.8	2.8	**260**

MW0030 (40 to 50)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	0.29 U	18.0	2.0	**130**

MW0036 (20 to 30)				
Date	TCE	cDCE	tDCE	VC
11/28/2016	**180**	36.0	4.3	0.40 U

MW0029 (30 to 40)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	0.29 U	5.6	1.2	**55.0**

MW0040 (12 to 22)				
Date	TCE	cDCE	tDCE	VC
12/01/2016	**62.0**	**1,500**	80.0	**100**

MW0032 (8 to 18)				
Date	TCE	cDCE	tDCE	VC
11/28/2016	2.4	**2,900**	**240**	**2,400**

MW0034 (8 to 18)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	1.4	61.0	6.4	**100**

MW0035 (18 to 28)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	**13.0**	**770**	64.0	**690**

LOX-TA0004S (8 to 18)				
Date	TCE	cDCE	tDCE	VC
12/01/2016	0.29 U	3.7	1.4	**82.0**

MW0031 (10 to 15)				
Date	TCE	cDCE	tDCE	VC
11/28/2016	**8.9**	13.0	1.5	0.20 U

MW0033 (36 to 46)				
Date	TCE	cDCE	tDCE	VC
11/28/2016	0.29 U	11.0	0.20 U	**180**

MW0037 (26 to 36)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	0.29 U	7.6	3.5	**31.0**

MW0038 (36 to 46)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	0.29 U	6.7	0.20 U	**6.2**

ECS-IW0004I (41.5 to 46.5)				
Date	TCE	cDCE	tDCE	VC
12/01/2016	0.29 U	1.4	6.6	**20.0**

ECS-IW0006I (32.5 to 37.5)				
Date	TCE	cDCE	tDCE	VC
12/01/2016	0.29 U	1.2	3.4	**8.7**

ECS-IW0008I (42.5 to 47.5)				
Date	TCE	cDCE	tDCE	VC
12/01/2016	0.29 U	59.0	4.3	**170**

MW0018 (20 to 30)				
Date	TCE	cDCE	tDCE	VC
11/29/2016	**1,400**	**640**	46.0	**960**

MW0019 (30 to 40)				
Date	TCE	cDCE	tDCE	VC
11/29/2016	**27.0**	**140**	51.0	**1,500**

ECS-IW0005I (42 to 47)				
Date	TCE	cDCE	tDCE	VC
12/01/2016	0.29 U	1.6	6.3	**170**

MW0016 (20 to 30)				
Date	TCE	cDCE	tDCE	VC
11/29/2016	**410**	**160**	19.0	**97.0**

MW0017 (30 to 40)				
Date	TCE	cDCE	tDCE	VC
11/29/2016	2.7	3.4	3.5	**620**

MW0026 (30 to 40)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	**230**	**430**	59.0	**210**

MW0014 (16 to 26)				
Date	TCE	cDCE	tDCE	VC
11/29/2016	**4.0**	3.6	3.7	**150**

MW0027 (40 to 50)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	0.29 U	18.0	9.9	**900**

MW0015 (26.4 to 36.4)				
Date	TCE	cDCE	tDCE	VC
11/29/2016	0.29 U	0.24 U	0.20 U	0.20 U

MW0024 (30 to 40)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	1.7	3.3	15.0	**83.0**

MW0025 (40 to 50)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	0.29 U	7.2	8.9	**960**

MW0013 (16 to 26)				
Date	TCE	cDCE	tDCE	VC
11/28/2016	**550**	**180**	28.0	**160**

MW0021 (20 to 30)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	2.1	7.4	1.8	**140**

MW0011 (40 to 50)				
Date	TCE	cDCE	tDCE	VC
11/28/2016	0.29 U	1.8	15.0	**18.0**

MW0022 (30 to 40)				
Date	TCE	cDCE	tDCE	VC
11/29/2016	0.29 U	2.1	10.0	**190**

MW0012 (40 to 50)				
Date	TCE	cDCE	tDCE	VC
11/28/2016	1.6	3.2	5.6	**54.0**

MW0023 (40 to 50)				
Date	TCE	cDCE	tDCE	VC
11/30/2016	0.58 U	7.2	5.2	**730**

MW0010 (21.8 to 31.8)				
Date	TCE	cDCE	tDCE	VC
11/28/2016	**4.1**	1.7	0.20 U	0.20 U

MW0020 (40 to 50)				
Date	TCE	cDCE	tDCE	VC
11/28/2016	0.29 U	4.0	1.5	**240**

Legend

- Newly Installed Performance Monitoring Well showing screen interval (ft BLS)
- Existing Performance Monitoring Well showing screen interval (ft BLS)
- Existing Monitoring Well (Not Part of Sampling Plan) showing screen interval (ft BLS)
- Abandoned Monitoring Well showing screen interval (ft BLS)
- Hot Spot 1 (1.08 acres)
- Hot Spot 2 (0.16 acres)
- Overall 10xNADC Isopleth (1.17 acres)
- Overall NADC Isopleth (8.67 acres)
- Overall GCTL Isopleth (26.62 acres)
- Ventilation Tunnel

Screening Criteria			
Parameter	Abbreviation	GCTL	NADC
Trichloroethene	TCE	3	300
cis-1,2-Dichloroethene	cDCE	70	700
trans-1,2-Dichloroethene	tDCE	100	1,000
Vinyl chloride	VC	1	100

Notes:
1. Results and screening criteria are presented in micrograms per liter (µg/L).
2. ft BLS indicates feet below land surface.
3. U indicates not detected above method detection limit.
4. Bold, yellow shaded text indicates analyte detected above Florida Department of Environmental Protection (FDEP) Groundwater Cleanup Target Level (GCTL).
5. Bold, orange shaded text indicates analyte detected above FDEP Natural Attenuation Default Concentration (NADC).
6. Newly installed monitoring wells were installed in November 2016.
7. Overall CVOC (chlorinated volatile organic compound) plume composed of overall TCE, cDCE, and VC plumes.
8. All monitoring well locations have prefix of "39B-".
9. Source of 2015 Aerial, FDOT Surveying and Mapping Office.

Figure 3-2
Baseline Groundwater Sampling Results November and December 2016

SECTION IV

AIR SPARGE INFRASTRUCTURE INSTALLATION

4.1 OVERVIEW

This section provides details of the air sparge system infrastructure installation, which includes details of the: (i) air sparge well installation activities; (ii) air conveyance piping installation activities; (iii) air distribution manifolds construction and installation; and (iv) air sparge infrastructure deviations from the IWP.

Field forms documenting the air sparge well installation activities (including soil boring logs) are provided in Appendix B, and air sparge well construction logs are provided in Appendix C. Laboratory analytical results from waste characterization and off-site backfill used are provided in Appendix D and RIS completion tickets associated with those results are provided in Appendix E. Waste manifests are provided in Appendix G.

Daily Construction Reports documenting non-air sparge well installation activities (e.g. air distribution manifold installations) are provided in Appendix H. The Daily Construction Reports include photographs taken during the construction activities and are submitted as the photographic logs for the event.

4.2 AIR SPARGE WELL INSTALLATION

Air sparge well installation activities occurred from 9 January 2017 through 17 February 2017 (not including weekends) and was conducted by GPI with oversight by Geosyntec. The activities included the installation of 279 air sparge wells (ASW0001 through ASW0279) using two rotosonic drill rigs operating simultaneously. Details about the installation activities are provided in the following sections.

4.2.1 SOIL BORING COLLECTION. During the air sparge well installations, a soil core was collected at each air sparge well boring, from a depth interval that included the proposed well screen interval. Initially, 5-ft soil cores were collected; however, on 23 January 2017 clay was the only type of soil identified in the soil core collected from air sparge well location ASW0021. After the collection of that soil core, the remaining soil cores collected were 10 ft in length. The results from these soil cores were used to adjust the final screen interval of the air sparge well, if warranted, to avoid installing the screens in low permeability zones (proposed and final screen intervals are provided in Table 4-1). The soil cores were placed into roll-off containers as IDW and details of the disposal are provided in Section 4.5.

4.2.2 AIR SPARGE WELL INSTALLATION DETAILS. The final coordinates of the air sparge wells were collected using a GPS with sub-centimeter accuracy (not professionally surveyed) and their locations are provided on Figure 4-1. Construction details of the air sparge wells are provided in Table 4-1. In general, air sparge wells were installed with top of screens at approximately 20, 35, 50, 52, or 57 ft below land surface (BLS). The air sparge wells were constructed as presented on Figure 4-2. The air sparge wells were constructed with 2-inch diameter Schedule 40 PVC with a 2-ft, 0.010-inch slotted screen and a 1-ft Schedule 40 PVC sump. A 20/30 sand filter pack was installed in the annular space generally between 6 inches and 1 ft above the screen, followed by a minimum 3-ft bentonite seal (with the exceptions of ASW0016 [2.9 ft], ASW0275 [2.7 ft], and ASW0277 [2.9 ft]). Grout was poured in the remaining annular space to ground surface via a tremie pipe. The bentonite seal was allowed to hydrate for a minimum of 20 minutes prior to the grout being poured. The air sparge wells were installed initially without wellheads or a completion by the drilling subcontractor (GPI). The construction contractor (FECC, Inc.) installed the wellheads and completions, which are described in Section 4.2.3.

The air sparge wells were developed using a gas-powered, centrifugal pump. The air sparge wells were developed at approximately 1 gal per minute for approximately 10 minutes. The development water was stored in a frac tank and details of the disposal are provided in Section 4.5.

4.2.3 AIR SPARGE WELLHEAD AND SURFACE COMPLETION INSTALLATION. Air sparge well completion and wellhead installation occurred after air sparge well installation activities were complete and during the completion of the air sparge system infrastructure installation activities. Construction details of the completions and wellheads are provided on Figure 4-2. The air sparge wells were either completed with a 12-inch bolt-down manhole set in a 2-ft x 2-ft x 4-inch thick concrete pad or directly buried with a magnetic marker placed adjacent to the air sparge wellhead to aid in identifying the air sparge well's location. For the air sparge wells with a manhole completion, the wellheads installed were galvanized steel, and for the direct buried air sparge wells, the wellheads were either PVC or galvanized steel.

The manhole-completed air sparge wells transitioned from 2-inch Schedule 40 PVC to 2-inch galvanized piping at approximately 2 ft BLS. Within the manholes, the 2-inch galvanized air sparge well piping was connected to a 2-inch galvanized tee. The top of the 2-inch galvanized tee was fitted with reducer bushings to allow for a 1/4-inch sampling port to be installed at the top of the wellhead. A reducer bushing was installed on the branch of the 2-inch galvanized tee followed by a 1-inch brass swing check valve, and a 1-inch male barb. One-inch pressure-rated flex hose was connected to the 1-inch male barb which then transitioned to the 1-inch high-density polyethylene (HDPE) piping, located outside of the manhole and below grade, via a 1-inch male barb and 1-inch HDPE transition fitting.

The direct buried air sparge wells were completed with either galvanized or PVC wellheads. The 2-inch Schedule 40 PVC air sparge well was connected to either a 2-inch Scheduled 40 PVC tee or a 2-inch galvanized tee. The top of the tee was capped and a reducer (2-inch to 1-inch) was installed on the branch of the tee (either PVC or galvanized). A 1-inch brass swing check valve, and a 1-inch male barb were installed on the reducer bushing. One-inch HDPE pipe was welded to a 1-inch HDPE transition fitting that was screwed into the 1-inch brass swing check valve.

4.3 AIR SPARGE PIPING INSTALLATION

Underground air sparge piping installation activities occurred from 23 January through 23 June 2017 (not including weekends) and were conducted by FECC, Inc. with oversight and assistance from Geosyntec.

4.3.1 AIR SPARGE SYSTEM ORGANIZATION. The general organization of the air sparge system did not deviate from what was presented in the Air Sparge IWP [NASA 2017a]. Air conveyance piping was installed such that four zones could be operated independently. The operational zone and leg that each air sparge well is installed in is provided in Table 4-1 and a summary of the system organization is provided in Table 4-2. The layout of the air sparge system (including which zone that each air sparge well is installed in) is presented on Figure 4-1. A brief description of the air sparge system organization is provided below.

- Zone 1 – split into two areas, one north of the ventilation tunnel (Manifold Group Z1A) and one south of the ventilation tunnel (Manifold Group Z1B) (blue air sparge wells on Figure 4-1)
    - Manifold Group Z1A has three legs (Legs Z1-L1, Z1-L2 and Z1-L3)
    - Manifold Group Z1B has one leg (Leg Z1-L4)
- Zone 2 – located north of the ventilation tunnel (green air sparge wells on Figure 4-1) and has four legs (Legs Z2-L1, Z2-L2, Z2-L3, and Z2-L4)
- Zone 3 – located south of the ventilation tunnel (yellow air sparge wells on Figure 4-1) and has three legs (Legs Z3-L1, Z3-L2, and Z3-L3)
- Zone 4 – located by the LOX area and northwest of the LC39B fence line (orange air sparge wells on Figure 4-1) and has two legs (Legs Z4-L1 and Z4-L2)

The legs comprising each zone are connected to the air compressor system and to air distribution manifolds, which distribute air to individual air sparge wells. Each leg in a zone conveys air to two or three air distribution manifolds (labeled A, B, or C as shown in Table 4-2), and each air distribution manifold conveys air to between six and 11 air sparge wells.

4.3.2 PIPING MATERIALS AND CONNECTION. The air conveyance piping consists of a combination of 1-inch diameter (individual air sparge wells) and 2-inch or 4-inch diameter standard-dimension ratio (SDR) 11 HDPE piping (leg piping) when below grade. During installation, the SDR 11 HDPE pipes were welded using butt fusion techniques by certified HDPE fusion welders. The number of welds were minimized in the field by sweeping the SDR 11 HDPE pipe when possible, as opposed to installing elbow fittings or 45-degree angled fittings. The piping was labeled regularly along the length of the piping to account for which leg or air sparge well it was associated with. Where compressed air conveyed by legs needed to be conveyed above grade (e.g. over the ventilation tunnel, connect to manifolds, etc.) the SDR11 HDPE pipe transitioned to galvanized pipe at approximately 2 ft BLS and either continued as galvanized pipe or transitioned to pressure-rated flex hose.

The piping utilized to convey air from the air compressor system to the manifolds south of the ventilation tunnel was a combination of 4-inch SDR 11 HDPE piping and 2-inch SDR 11 HDPE piping. The 4-inch SDR 11 HDPE piping was installed from the air compressor system to the north side of the ventilation tunnel. The 4-inch SDR 11 HDPE piping then transitioned to 2-inch galvanized piping to cross over the ventilation tunnel (Figure 4-3). On the south side of the ventilation tunnel, the 2-inch galvanized piping transitioned to 2-inch SDR 11 HDPE piping, which was installed from the south side of the ventilation tunnel to the air distribution manifolds located south of the ventilation tunnel.

The piping utilized to convey air from the air compressor system to the remaining distribution manifolds was 2-inch SDR 11 HDPE piping.

The piping used to convey air from the air distribution manifolds to the individual sparge wells was 1-inch SDR 11 HDPE piping.

4.3.3 TRENCHING, INSTALLATION, AND BACKFILL. The piping that conveys compressed air from the air compressor system to the air sparge wells was installed within a network of trenches of varying widths and depths (Figure 4-4). The trenches were a minimum of 6-inches wide and deep enough so that the top of the piping was installed a minimum of 24-inches below grade. Trenches were excavated for the air conveyance piping using a mini-excavator, except for areas located within 2 ft of utilities (as marked by KSC utility locators or GPR subcontractor) or around obstructions (e.g. pipe racks), where hand excavation of the trenches was performed. Trenches were backfilled with the excavated material, except where excavated material was disposed of, and were compacted with the construction vehicles (e.g. skid steer) on site.

During excavation activities south of the ventilation tunnel, concrete was encountered below grade that needed to be removed prior to piping installation. The concrete was broken up using a hammer attached to a mini-excavator and the concrete/native soil mixture was disposed of off

site. Details of the disposal are provided in Section 4.5. Fill material was needed to backfill the trenches in this area back to grade. Eight truckloads of fill (approximately 144 cubic yards) were delivered to site by Bishop & Buttery Incorporated. Consistent with FDEP requirements, a sample of the fill material was analyzed (prior to being delivered to the site) by Pace Analytical for pesticides using EPA Method 8081, polychlorinated biphenyls using EPA Method 8082, eight RCRA metals using EPA Methods 6010 and 7471, volatile organic compounds using EPA Method 8260, semi-volatile organic compounds using EPA Method 8270, and petroleum using FL-PRO. The only compounds detected were acetone, carbon disulfide, arsenic, barium, cadmium, chromium, and lead, which were all below the FDEP Residential Soil Cleanup Target Levels.

Where air conveyance piping needed to cross roadways, a walk-behind concrete saw was used to cut the roadway so the pavement could be removed and the material beneath could be excavated. Upon completion of air conveyance piping installation, the native soil was used to backfill the trench and was compacted to approximately 1 ft BLS. The compacted native backfill was topped with 6 inches of compacted limerock that was compacted to a minimum 98 percent proctor (the compaction testing was performed by Universal Engineering Sciences at each road cut). The final 6 inches were completed using 4,000 pounds per square inch (psi) fiber mesh concrete. The concrete's strength was confirmed through a compressive strength test conducted by Universal Engineering Sciences. A Maintenance of Traffic (MOT) was used to close the roadway around the excavation during excavation, piping installation, backfilling, and re-paving.

Results from compaction testing and compressive strength testing conducted during installation activities are provided in Appendix I, and load tickets from materials delivered during installation are provided Appendix J.

4.3.4 PRESSURE TESTING. During the installation process, the air conveyance piping was pressure tested with an air compressor prior to being installed below grade and after it was installed below grade, but before being completely backfilled. Prior to installing the 1-inch and 2-inch SDR 11 HDPE pipe below grade, the 500-ft rolls of pipe were pressure tested to confirm that there were no perforations or punctures in the pipes. For the 4-inch SDR 11 HDPE pipe, multiple lengths of pipe were welded together and the entire length was pressure tested to confirm that there were no perforations or punctures in the pipe, and no leaks at the welds. After all sizes of SDR 11 HDPE pipe were installed below grade (before backfilling was completed) the pipe was pressure tested to check that the installation process did not result in any air leaks.

The pressure testing process prior to installation of the piping below grade included welding a cap onto one end of the SDR 11 HDPE piping and an air compressor connection with a pressure gauge and valve on the other. The SDR 11 HDPE pipe was then pressurized to a minimum of 60 psi. The pipe passed the pressure test if it held 60 psi for at least one hour. The pressure testing process after the SDR 11 HDPE pipe was installed (prior to backfilling) and connected to air

sparge wells included pressurizing the installed pipe to a point where air flow was occurring (final pressures were generally between 20 and 30 psi) and applying a soapy water solution along the pipe and various fittings to check for leaks (if leaks were present, bubble formed). No leaks were identified in the HDPE welds. Where leaks were identified in fittings, the fittings were tightened and the piping was re-pressure tested to confirm the leak was no longer present.

4.4 AIR DISTRIBUTION MANIFOLD INSTALLATION

Thirty-two air distribution manifolds were installed in the air sparge system treatment area to distribute air from the air compressor system to the individual sparge wells. The manifolds were manufactured off site by FECC, Inc. and as-built details for the manifolds are presented on Figures 4-5 and 4-6. The manifolds are constructed using a 60-inch x 36-inch x 12-inch weather proof National Electrical Manufacturers Association (NEMA) enclosure, which houses the block manifold which allows for distribution of compressed air to up to 11 air sparge wells simultaneously. Attached to the block manifolds are ½-inch brass gate valves (allow for air flow adjustment), flow meters (King 7200-0072-6-1A; 1.4 to 14 standard cubic ft per minute [scfm] range) and pressure gauges (Winters PFQ-ZR StabiliZr; 0 to 60 psi) for each air sparge well. The metering equipment can be isolated from the air flow during normal operation using three-way ball valves; therefore, air only flows through the meters when necessary (during O&M event), thus prolonging the life of the meters.

Each NEMA enclosure is bolted to two, 1-ft tall footers that are bolted to the top of a concrete pad constructed of 4,000 psi concrete with fiber reinforcement (concrete load tickets are provided in Appendix J).

4.5 WASTE CHARACTERIZATION AND IDW MANAGEMENT

IDW was generated during the monitoring and air sparge well installation activities and baseline groundwater sampling activities (consisted of development, purge, and decontamination water and soil cuttings). Waste manifests are provided in Appendix G.

Liquid IDW from the air sparge well installation was containerized in a frac tank which was staged on site. Liquid IDW from the monitoring well installation and sampling activities was containerized in 55-gal drums initially and then the liquid from the drums was transferred into the frac tank. A liquid sample was collected from the frac tank and analyzed for volatile organic compounds using EPA Method 8260B (by AEL). The liquid IDW (approximately 3,500 gal) was transported to Liquid Environmental Solutions by FECC, Inc. for disposal as non-hazardous waste on 3 May 2017.

Soil IDW from the air sparge well installation activities was contained in two roll-offs. A soil sample was collected from both roll-offs and was analyzed for polychlorinated biphenyls using EPA Method 8082A, volatile organic compounds with Toxicity Characteristic Leaching

Procedure (TCLP) using EPA Method 8260B, and eight RCRA metals with TCLP using EPA Method 6010C and 7074A. The soil IDW (36 tons) was transported to the Omni Waste of Osceola County Landfill by FECC, Inc. for disposal as non-hazardous waste on 4 and 8 May 2017.

The mixed concrete/native soil mixture that was excavated during the piping installation was disposed of at the East Schwartz Road landfill. Nine roll-offs of the mixture were disposed of (approximately 253,000 pounds), instead of being used as backfill.

4.6 AIR SPARGE INFRASTRUCTURE DEVIATIONS

Deviations from the Air Sparge IWP [NASA 2017a] during the infrastructure installation and construction included adjustments to the air sparge well construction details, air sparge well completions, conveyance piping layout, and pipe size. The deviations are summarized below.

- As described in Section 4.2, the results of soil cores collected at each air sparge well location during their installation were used to adjust the depth of the air sparge well screen intervals (as necessary).
- Air sparge well locations were adjusted, as necessary, due to site features and utilities.
- Marking poles with reflective tape were proposed to be installed at the location of each direct buried air sparge well located outside the LC39B Pad fencing. The marking poles were not installed to reduce the potential for flying debris during launches/bad weather and to increase the ability for maintenance crews to mow the area. Instead a magnetic marker was placed adjacent to the air sparge wellhead to aid in well location identification (Section 4.2.3).
- As described in Section 4.3.2, the layout of the air conveyance piping deviated from the design presented in the IWP. One deviation included reducing the number of fittings used to reduce the number of welds required. Another deviation included altering the proposed piping layout to reduce the number of LOX line crossings, reducing time for road closure, and increasing the ease of installation activities based upon field conditions during installation.
- As described in Section 4.3.2, the size of the SDR 11 HDPE pipe used for Manifold Group Z1B and Zone Z3 (serving air sparge south of the ventilation tunnel) was modified from 4-inch SDR 11 HDPE piping to include: (i) 4-inch SDR 11 HDPE piping to just north of the ventilation tunnel; (ii) transitions from 4-inch SDR 11 HDPE to 2-inch galvanized piping to cross over the ventilation tunnel; and (iii) transitions from 2-inch galvanized piping to 2-inch SDR 11 HDPE piping south of the ventilation tunnel.

Table 4-1. Air Sparge Well Construction Details
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Air Sparge Well ID	Operational Location (Zone-Leg)	Date Installed	Easting (m)	Northing (m)	Proposed Screen Interval (ft BLS)	Installed Screen Interval (ft BLS)	Completion Type
ASW0001	Z1-L1	1/18/2017	236734.856	475926.401	57-59	56-58	BG
ASW0002	Z1-L1	1/19/2017	236749.592	475933.541	57-59	56.8-58.8	BG
ASW0003	Z1-L1	1/13/2017	236761.228	475939.994	57-59	56.8-58.8	BP
ASW0004	Z1-L1	1/11/2017	236771.771	475944.330	57-59	57.08-59.08	BG
ASW0005	Z1-L1	1/13/2017	236785.293	475951.544	57-59	57.1-59.1	BP
ASW0006	Z1-L1	1/19/2017	236757.404	475915.218	57-59	56.1-58.1	BP
ASW0007	Z1-L1	1/19/2017	236770.430	475920.369	57-59	56-58	BG
ASW0008	Z1-L1	1/13/2017	236784.244	475927.227	57-59	57-59	BP
ASW0009	Z1-L1	1/10/2017	236794.773	475931.491	57-59	57.02-59.02	BG
ASW0010	Z1-L1	1/16/2017	236809.096	475938.895	57-59	56.8-58.8	BP
ASW0011	Z1-L1	1/20/2017	236755.316	475889.205	57-59	56.1-58.1	BP
ASW0012	Z1-L1	1/20/2017	236770.275	475896.205	57-59	55-57	BG
ASW0013	Z1-L1	1/19/2017	236784.338	475904.049	57-59	56-58	BP
ASW0014	Z1-L1	1/12/2017	236797.925	475912.374	57-59	57-59	BG
ASW0015	Z1-L1	1/12/2017	236809.644	475915.719	57-59	56.8-58.8	BG
ASW0016	Z1-L1	1/16/2017	236826.772	475924.496	57-59	56-58	BG
ASW0017	Z1-L1	1/16/2017	236850.402	475930.665	52-54	51.9-53.9	BP
ASW0018	Z1-L2	1/20/2017	236754.783	475863.165	57-59	56.9-58.9	BG
ASW0019	Z1-L2	1/20/2017	236766.420	475872.775	57-59	56.9-58.9	BG
ASW0020	Z1-L2	1/20/2017	236779.284	475878.217	57-59	56-58	BG
ASW0021	Z1-L2	1/23/2017	236791.923	475883.301	57-59	52.3-54.3	BP
ASW0022	Z1-L2	1/19/2017	236805.392	475890.083	57-59	54.5-56.5	BP
ASW0023	Z1-L2	1/24/2017	236752.264	475841.986	57-59	56-58	BG
ASW0024	Z1-L2	1/24/2017	236765.612	475846.413	57-59	57-59	BG
ASW0025	Z1-L2	1/24/2017	236779.242	475852.601	57-59	56.9-58.9	BG
ASW0026	Z1-L2	1/23/2017	236791.752	475858.466	57-59	56-58	BG
ASW0027	Z1-L2	1/23/2017	236805.385	475864.908	57-59	56-58	BP
ASW0028	Z1-L2	1/24/2017	236817.630	475870.440	57-59	54.9-56.9	BP
ASW0029	Z1-L2	1/30/2017	236755.118	475821.540	57-59	56.8-58.8	BG
ASW0030	Z1-L2	1/24/2017	236763.208	475828.951	57-59	56.9-58.9	BG
ASW0031	Z1-L2	1/24/2017	236772.697	475834.137	57-59	56-58	BG
ASW0032	Z1-L2	1/25/2017	236783.605	475837.451	57-59	55.5-57.5	BG
ASW0033	Z1-L2	1/25/2017	236793.602	475839.904	57-59	56-58	BG
ASW0034	Z1-L2	1/25/2017	236803.096	475839.294	57-59	55.4-57.4	BG
ASW0035	Z1-L2	1/25/2017	236816.278	475844.276	57-59	56-58	BG
ASW0036	Z1-L2	1/25/2017	236828.382	475851.303	57-59	55-57	BG
ASW0037	Z1-L2	2/2/2017	236758.241	475812.205	57-59	57-59	BG
ASW0038	Z1-L2	1/30/2017	236764.978	475818.777	57-59	56.9-58.9	BG
ASW0039	Z1-L2	1/30/2017	236774.688	475824.559	57-59	56.7-58.7	BG
ASW0040	Z1-L2	1/27/2017	236781.898	475829.884	57-59	55.9-57.9	BG
ASW0041	Z1-L3	1/12/2017	236820.721	475896.752	52-54	51.9-53.9	BG
ASW0042	Z1-L3	1/12/2017	236832.541	475903.489	52-54	52.2-54.2	BP
ASW0043	Z1-L3	1/12/2017	236844.790	475906.631	52-54	52-54	BG
ASW0044	Z1-L3	1/16/2017	236859.297	475908.180	52-54	52.2-54.2	BG
ASW0045	Z1-L3	1/17/2017	236883.079	475919.345	52-54	51-53	BG
ASW0046	Z1-L3	1/18/2017	236893.198	475926.544	52-54	52.1-54.1	BG
ASW0047	Z1-L3	1/19/2017	236830.999	475875.681	57-59	53.5-55.5	BG
ASW0048	Z1-L3	1/11/2017	236841.716	475881.270	52-54	51.8-53.8	BG
ASW0049	Z1-L3	1/11/2017	236856.502	475887.465	52-54	52-54	BP
ASW0050	Z1-L3	1/11/2017	236870.169	475893.629	52-54	51.9-53.9	BG
ASW0051	Z1-L3	1/17/2017	236882.973	475899.663	52-54	51.9-53.9	BG
ASW0052	Z1-L3	1/17/2017	236895.019	475906.221	52-54	51.5-53.5	BG
ASW0053	Z1-L3	1/18/2017	236906.551	475911.097	52-54	52.1-54.1	BG
ASW0054	Z1-L3	1/25/2017	236841.340	475857.236	57-59	55-57	BP
ASW0055	Z1-L3	1/17/2017	236906.177	475882.444	52-54	52-54	BG
ASW0056	Z1-L3	1/17/2017	236918.895	475889.423	52-54	51.8-53.8	BG
ASW0057	Z1-L3	1/11/2017	236878.901	475856.048	52-54	56.3-58.3	BG
ASW0058	Z1-L3	1/26/2017	236828.837	475829.146	57-59	54.9-56.9	BG
ASW0059	Z1-L3	1/26/2017	236845.319	475836.057	57-59	54.8-56.8	BG
ASW0060	Z1-L3	1/26/2017	236858.235	475842.602	57-59	54-56	BG
ASW0061	Z1-L3	1/26/2017	236836.741	475826.103	57-59	56-58	BG
ASW0062	Z1-L3	1/26/2017	236845.956	475820.950	57-59	55-57	BG
ASW0063	Z1-L3	1/26/2017	236860.155	475822.425	57-59	55-57	BG
ASW0064	Z2-L1	1/30/2017	236757.243	475802.476	57-59	56.2-58.2	BP
ASW0065	Z2-L1	2/3/2017	236764.589	475807.139	57-59	57-59	BP
ASW0066	Z2-L1	2/2/2017	236773.511	475813.484	57-59	56.9-58.9	BP
ASW0067	Z2-L1	1/31/2017	236784.685	475818.549	57-59	57-59	BP
ASW0068	Z2-L1	1/31/2017	236789.325	475823.138	57-59	56.7-58.7	BP
ASW0069	Z2-L1	1/27/2017	236792.627	475831.204	57-59	57-59	BP

Table 4-1. Air Sparge Well Construction Details
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Air Sparge Well ID	Operational Location (Zone-Leg)	Date Installed	Easting (m)	Northing (m)	Proposed Screen Interval (ft BLS)	Installed Screen Interval (ft BLS)	Completion Type
ASW0070	Z2-L1	1/27/2017	236802.216	475829.734	57-59	55.8-57.8	BP
ASW0071	Z2-L1	1/27/2017	236766.966	475796.746	57-59	57.3-59.3	BP
ASW0072	Z2-L1	2/3/2017	236773.239	475803.448	57-59	57-59	BP
ASW0073	Z2-L1	2/2/2017	236781.334	475810.920	57-59	56.9-58.9	BP
ASW0074	Z2-L1	2/2/2017	236793.009	475811.579	57-59	57.1-59.1	BP
ASW0075	Z2-L1	1/31/2017	236797.644	475820.792	57-59	56.7-58.7	BP
ASW0076	Z2-L1	1/27/2017	236761.539	475785.065	57-59	56.9-58.9	BP
ASW0077	Z2-L1	1/27/2017	236771.027	475786.437	57-59	57.2-59.2	BP
ASW0078	Z2-L1	1/27/2017	236774.324	475793.540	57-59	57-59	BP
ASW0079	Z2-L1	2/3/2017	236780.989	475799.830	57-59	56.9-58.9	BP
ASW0080	Z2-L1	2/3/2017	236789.261	475803.386	57-59	57-59	BP
ASW0081	Z2-L1	1/26/2017	236780.269	475788.453	57-59	57-59	BP
ASW0082	Z2-L1	1/26/2017	236790.384	475794.362	57-59	57-59	BP
ASW0083	Z2-L1	2/3/2017	236798.801	475801.700	57-59	57-59	BP
ASW0084	Z2-L1	2/2/2017	236802.281	475811.071	57-59	57-59	BP
ASW0085	Z2-L2	1/25/2017	236778.104	475781.536	57-59	56.6-58.6	BP
ASW0086	Z2-L2	1/26/2017	236790.578	475784.968	57-59	57.2-59.2	BP
ASW0087	Z2-L2	1/25/2017	236770.018	475770.170	57-59	57.2-59.2	BP
ASW0088	Z2-L2	1/25/2017	236787.801	475779.252	57-59	57-59	BP
ASW0089	Z2-L2	1/26/2017	236800.088	475783.227	57-59	56.1-58.1	BP
ASW0090	Z2-L2	1/24/2017	236767.985	475757.150	57-59	57.1-59.1	BP
ASW0091	Z2-L2	1/24/2017	236784.625	475765.216	57-59	57-59	BP
ASW0092	Z2-L2	1/24/2017	236794.215	475768.773	57-59	57-59	BP
ASW0093	Z2-L2	1/24/2017	236797.984	475775.573	57-59	57.2-59.2	BP
ASW0094	Z2-L2	1/23/2017	236808.798	475777.129	57-59	57-59	BP
ASW0095	Z2-L2	1/20/2017	236781.650	475754.608	57-59	57.1-59.1	BP
ASW0096	Z2-L2	1/20/2017	236792.259	475757.862	57-59	57-59	BP
ASW0097	Z2-L2	1/20/2017	236801.863	475759.345	57-59	57.2-59.2	BP
ASW0098	Z2-L2	1/23/2017	236805.293	475767.408	57-59	57.1-59.1	BP
ASW0099	Z2-L2	1/23/2017	236815.429	475770.696	57-59	57.1-59.1	BP
ASW0100	Z2-L2	1/19/2017	236786.827	475748.749	57-59	57.3-59.3	BP
ASW0101	Z2-L2	1/30/2017	236795.422	475753.086	57-59	57-59	BP
ASW0102	Z2-L2	1/30/2017	236804.748	475756.278	57-59	57-59	BP
ASW0103	Z2-L2	1/31/2017	236811.836	475762.803	57-59	57-59	BP
ASW0104	Z2-L2	1/31/2017	236819.429	475764.518	57-59	57.1-59.1	BP
ASW0105	Z2-L3	1/27/2017	236810.079	475831.679	57-59	54.9-56.9	BP
ASW0106	Z2-L3	1/27/2017	236819.107	475830.033	57-59	54.8-56.8	BP
ASW0107	Z2-L3	1/31/2017	236806.714	475820.766	57-59	56.8-58.8	BG
ASW0108	Z2-L3	1/31/2017	236814.941	475821.683	57-59	56.8-58.8	BG
ASW0109	Z2-L3	1/31/2017	236822.023	475821.462	57-59	56.8-58.8	BG
ASW0110	Z2-L3	2/1/2017	236829.905	475818.001	57-59	56.9-58.9	BG
ASW0111	Z2-L3	2/2/2017	236811.768	475810.899	57-59	56.9-58.9	BG
ASW0112	Z2-L3	2/1/2017	236819.677	475811.214	57-59	56.9-58.9	BG
ASW0113	Z2-L3	2/1/2017	236827.334	475809.136	57-59	57-59	BG
ASW0114	Z2-L3	2/1/2017	236836.870	475814.670	57-59	56.6-58.6	BG
ASW0115	Z2-L3	2/1/2017	236835.738	475805.517	57-59	56.9-58.9	BG
ASW0116	Z2-L3	2/1/2017	236846.517	475809.886	57-59	55.9-57.9	BG
ASW0117	Z2-L3	2/7/2017	236845.632	475801.315	57-59	56.8-58.8	BG
ASW0118	Z2-L3	2/7/2017	236855.338	475804.472	57-59	56.8-58.8	BG
ASW0119	Z2-L3	2/7/2017	236864.861	475809.326	57-59	56.8-58.8	BG
ASW0120	Z2-L3	2/7/2017	236874.749	475814.104	57-59	55.8-57.8	BG
ASW0121	Z2-L3	2/8/2017	236854.469	475794.603	57-59	56.9-58.9	BG
ASW0122	Z2-L3	2/8/2017	236863.261	475800.236	57-59	55.7-57.7	BG
ASW0123	Z2-L3	2/7/2017	236872.801	475803.203	57-59	56.9-58.9	BG
ASW0124	Z2-L3	2/7/2017	236881.367	475807.460	57-59	56.1-58.1	BG
ASW0125	Z2-L3	2/1/2017	236863.140	475789.148	57-59	57.2-59.2	BG
ASW0126	Z2-L3	2/1/2017	236872.055	475794.471	57-59	57.3-59.3	BG
ASW0127	Z2-L3	2/1/2017	236880.628	475799.939	57-59	57.2-59.2	BG
ASW0128	Z2-L3	2/1/2017	236889.119	475805.474	57-59	57.1-59.1	BG
ASW0129	Z2-L4	2/9/2017	236797.341	475791.769	57-59	57-59	BP
ASW0130	Z2-L4	2/8/2017	236806.099	475795.934	57-59	56.8-58.8	BP
ASW0131	Z2-L4	2/6/2017	236808.512	475802.094	57-59	56.8-58.8	BP
ASW0132	Z2-L4	2/9/2017	236807.242	475788.759	57-59	56.8-58.8	BP
ASW0133	Z2-L4	2/9/2017	236814.101	475784.468	57-59	56.8-58.8	BP
ASW0134	Z2-L4	2/8/2017	236816.754	475793.712	57-59	56.8-58.8	BP
ASW0135	Z2-L4	2/6/2017	236818.216	475802.156	57-59	56.7-58.7	BG

Table 4-1. Air Sparge Well Construction Details
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Air Sparge Well ID	Operational Location (Zone-Leg)	Date Installed	Easting (m)	Northing (m)	Proposed Screen Interval (ft BLS)	Installed Screen Interval (ft BLS)	Completion Type
ASW0136	Z2-L4	2/6/2017	236827.477	475799.217	57-59	56.8-58.8	BG
ASW0137	Z2-L4	2/9/2017	236821.635	475785.147	57-59	56.7-58.7	BG
ASW0138	Z2-L4	2/8/2017	236826.886	475790.935	57-59	56.6-58.6	BG
ASW0139	Z2-L4	2/6/2017	236836.568	475796.020	57-59	56.8-58.8	BG
ASW0140	Z2-L4	2/9/2017	236819.689	475777.111	57-59	56.8-58.8	BP
ASW0141	Z2-L4	2/9/2017	236829.961	475780.969	57-59	56.8-58.8	BP
ASW0142	Z2-L4	2/8/2017	236836.403	475790.048	57-59	56.8-58.8	BG
ASW0143	Z2-L4	2/10/2017	236839.362	475783.187	57-59	56.8-58.8	BG
ASW0144	Z2-L4	2/8/2017	236845.782	475790.796	57-59	56.8-58.8	BG
ASW0145	Z2-L4	1/31/2017	236828.653	475770.756	57-59	57-59	BP
ASW0146	Z2-L4	1/31/2017	236837.082	475774.605	57-59	57-59	BP
ASW0147	Z2-L4	1/31/2017	236846.693	475780.528	57-59	57.2-59.2	BP
ASW0148	Z2-L4	2/1/2017	236854.018	475783.994	57-59	57-59	BP
ASW0149	Z3-L1	2/17/2017	236814.125	475739.089	57-59	56.7-58.7	BP
ASW0150	Z3-L1	2/16/2017	236817.978	475744.869	57-59	56.6-58.6	BP
ASW0151	Z3-L1	2/14/2017	236827.689	475748.119	57-59	56.65-58.65	BP
ASW0152	Z3-L1	2/14/2017	236833.912	475752.310	57-59	56.44-58.44	BP
ASW0153	Z3-L1	2/16/2017	236840.769	475758.406	57-59	56.7-58.7	BP
ASW0154	Z3-L1	2/16/2017	236850.231	475764.248	57-59	56-58	BP
ASW0155	Z3-L1	2/17/2017	236819.683	475731.238	57-59	56-58	BP
ASW0156	Z3-L1	2/13/2017	236827.054	475739.547	57-59	56.55-58.55	BP
ASW0157	Z3-L1	2/13/2017	236835.817	475741.198	57-59	56.75-58.75	BP
ASW0158	Z3-L1	2/14/2017	236841.976	475749.008	57-59	56.70-58.70	BP
ASW0159	Z3-L1	2/14/2017	236850.612	475754.914	57-59	56.7-58.7	BP
ASW0160	Z3-L1	2/9/2017	236826.355	475728.434	57-59	57.2-59.2	BP
ASW0161	Z3-L1	2/9/2017	236836.706	475733.578	57-59	56.9-58.9	BP
ASW0162	Z3-L1	2/10/2017	236846.738	475738.213	57-59	57.2-59.2	BP
ASW0163	Z3-L1	2/13/2017	236851.437	475744.436	57-59	56.7-58.7	BP
ASW0164	Z3-L2	2/14/2017	236861.026	475767.741	57-59	56.6-58.6	BP
ASW0165	Z3-L2	2/16/2017	236867.439	475774.027	57-59	56.9-58.9	BP
ASW0166	Z3-L2	2/15/2017	236875.821	475775.170	57-59	56.8-58.8	BP
ASW0167	Z3-L2	2/15/2017	236882.362	475782.917	57-59	56.7-58.7	BP
ASW0168	Z3-L2	2/15/2017	236888.902	475786.917	57-59	56.8-58.8	BP
ASW0169	Z3-L2	2/7/2017	236898.554	475788.886	57-59	57.2-59.2	BP
ASW0170	Z3-L2	2/7/2017	236905.094	475796.188	57-59	57.2-59.2	BP
ASW0171	Z3-L2	2/14/2017	236860.264	475758.724	57-59	56.65-58.65	BP
ASW0172	Z3-L2	2/15/2017	236869.281	475764.185	57-59	56.75-58.75	BP
ASW0173	Z3-L2	2/15/2017	236876.774	475769.392	57-59	56.8-58.8	BP
ASW0174	Z3-L2	2/15/2017	236885.283	475776.186	57-59	57-59	BP
ASW0175	Z3-L2	2/8/2017	236894.300	475780.186	57-59	57.2-59.2	BP
ASW0176	Z3-L2	2/7/2017	236906.110	475782.853	57-59	56.9-58.9	BP
ASW0177	Z3-L2	2/7/2017	236909.539	475789.965	57-59	57.1-59.1	BP
ASW0178	Z3-L2	2/8/2017	236894.724	475770.200	57-59	57.1-59.1	BP
ASW0179	Z3-L2	2/7/2017	236903.063	475774.154	57-59	55.1-57.1	BP
ASW0180	Z1-L4	2/17/2017	236822.863	475723.608	57-59	57.1-59.1	BP
ASW0181	Z1-L4	2/9/2017	236838.166	475725.704	57-59	57.3-59.3	BP
ASW0182	Z1-L4	2/13/2017	236849.977	475727.672	57-59	56.6-58.6	BP
ASW0183	Z1-L4	2/9/2017	236856.708	475736.816	57-59	56.9-58.9	BP
ASW0184	Z1-L4	2/8/2017	236860.264	475749.008	57-59	57.2-59.2	BP
ASW0185	Z1-L4	2/8/2017	236868.328	475756.628	57-59	57.3-59.3	BP
ASW0186	Z1-L4	2/8/2017	236878.107	475760.565	57-59	57.2-59.2	BP
ASW0187	Z1-L4	2/8/2017	236886.426	475766.598	57-59	57.1-59.1	BP
ASW0188	Z1-L4	2/10/2017	236838.166	475712.940	57-59	56.8-58.8	BP
ASW0189	Z1-L4	2/10/2017	236851.247	475717.957	57-59	56.7-58.7	BP
ASW0190	Z1-L4	2/16/2017	236859.756	475727.609	57-59	56.8-58.8	BP
ASW0191	Z1-L4	2/6/2017	236893.474	475753.707	57-59	57.2-59.2	BP
ASW0192	Z1-L4	2/16/2017	236855.311	475707.099	57-59	56.75-58.75	BP
ASW0193	Z1-L4	2/16/2017	236872.900	475706.083	57-59	56.7-58.7	BP
ASW0194	Z1-L4	2/16/2017	236885.169	475713.286	57-59	56.8-58.8	BP
ASW0195	Z1-L4	2/3/2017	236906.237	475740.944	57-59	55.9-57.9	BP
ASW0196	Z3-L2	2/6/2017	236874.615	475738.023	57-59	57.1-59.1	BP
ASW0197	Z3-L2	2/6/2017	236882.044	475745.389	57-59	57.2-59.2	BP
ASW0198	Z3-L2	2/6/2017	236877.409	475728.879	57-59	57.2-59.2	BP
ASW0199	Z3-L2	2/3/2017	236883.505	475737.896	57-59	57-59	BP
ASW0200	Z3-L2	2/3/2017	236893.030	475738.721	57-59	57-59	BP
ASW0201	Z3-L2	2/3/2017	236888.839	475729.577	57-59	56.8-58.8	BP

Table 4-1. Air Sparge Well Construction Details
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Air Sparge Well ID	Operational Location (Zone-Leg)	Date Installed	Easting (m)	Northing (m)	Proposed Screen Interval (ft BLS)	Installed Screen Interval (ft BLS)	Completion Type
ASW0202	Z3-L3	2/2/2017	236903.634	475763.804	50-52	50.6-52.6	BP
ASW0203	Z3-L3	2/2/2017	236912.143	475768.312	50-52	50.4-52.4	BP
ASW0204	Z3-L3	2/2/2017	236912.460	475777.583	50-52	50.3-52.3	BP
ASW0205	Z3-L3	2/2/2017	236917.159	475787.171	50-52	49.3-51.3	BP
ASW0206	Z3-L3	2/2/2017	236923.890	475793.585	50-52	50.7-52.7	BP
ASW0207	Z3-L3	2/2/2017	236914.556	475759.930	50-52	50.4-52.4	BP
ASW0208	Z3-L3	2/15/2017	236919.953	475768.249	50-52	49.6-51.6	BP
ASW0209	Z3-L3	2/15/2017	236921.541	475777.329	50-52	49.9-51.9	BP
ASW0210	Z3-L3	2/15/2017	236926.113	475775.678	50-52	49.6-51.6	BP
ASW0211	Z3-L3	2/14/2017	236928.208	475784.758	50-52	49.8-51.8	BP
ASW0212	Z3-L3	2/14/2017	236933.669	475792.886	50-52	50-52	BP
ASW0213	Z3-L3	2/17/2017	236919.001	475746.532	50-52	50-52	BP
ASW0214	Z3-L3	2/10/2017	236925.859	475759.232	50-52	50.15-52.15	BP
ASW0215	Z3-L3	2/15/2017	236930.685	475767.169	50-52	49.8-51.8	BP
ASW0216	Z3-L3	2/15/2017	236934.431	475776.821	50-52	49.8-51.8	BP
ASW0217	Z3-L3	2/14/2017	236938.876	475786.219	50-52	49.9-51.9	BP
ASW0218	Z3-L3	2/14/2017	236942.559	475793.648	50-52	50-52	BP
ASW0219	Z3-L3	2/10/2017	236934.939	475756.755	50-52	50.1-52.1	BP
ASW0220	Z3-L3	2/13/2017	236942.051	475762.407	50-52	50.33-52.33	BP
ASW0221	Z3-L3	2/15/2017	236939.702	475769.519	50-52	49.8-51.8	BP
ASW0222	Z3-L3	2/14/2017	236943.702	475778.916	50-52	50.33-52.33	BP
ASW0223	Z3-L3	2/14/2017	236946.052	475786.028	50-52	50-52	BP
ASW0224	Z3-L3	2/17/2017	236947.195	475750.215	50-52	49.75-51.75	BP
ASW0225	Z3-L3	2/13/2017	236949.354	475765.264	50-52	50-52	BP
ASW0226	Z3-L3	2/13/2017	236949.735	475773.265	50-52	50-52	BP
ASW0227	Z3-L3	2/16/2017	236953.799	475779.805	50-52	49.8-51.8	BP
ASW0228	Z3-L3	2/17/2017	236958.189	475754.149	50-52	50-52	BP
ASW0229	Z3-L3	2/13/2017	236960.784	475771.487	50-52	50-52	BP
ASW0230	Z3-L3	2/16/2017	236908.714	475724.053	50-52	49.9-51.9	BP
ASW0231	Z3-L3	2/16/2017	236921.985	475729.895	50-52	49.8-51.8	BP
ASW0232	Z3-L3	2/16/2017	236933.542	475737.451	50-52	49.85-51.85	BP
ASW0233	Z3-L3	2/17/2017	236902.745	475685.572	50-52	50-52	BP
ASW0234	Z4-L1	1/18/2017	236557.176	476107.664	20-22	19.9-21.9	BP
ASW0235	Z4-L1	1/18/2017	236566.624	476107.612	20-22	20-22	BP
ASW0236	Z4-L1	1/18/2017	236556.303	476101.233	20-22	20.2-22.2	BP
ASW0237	Z4-L1	1/18/2017	236566.147	476099.645	20-22	20-22	BP
ASW0238	Z4-L1	1/19/2017	236573.555	476102.944	20-22	20-22	BP
ASW0239	Z4-L1	1/18/2017	236575.049	476047.992	20-22	20.2-22.2	BP
ASW0240	Z4-L1	1/18/2017	236577.146	476042.674	20-22	20-22	BP
ASW0241	Z4-L1	1/9/2017	236648.831	475990.738	20-22	20-22	WP
ASW0242	Z4-L1	1/10/2017	236659.511	475992.150	20-22	20.3-22.3	WP
ASW0243	Z4-L1	1/10/2017	236663.510	475991.477	20-22	20.37-22.37	WP
ASW0244	Z4-L1	1/9/2017	236650.744	475985.846	20-22	20-22	WP
ASW0245	Z4-L1	1/10/2017	236661.734	475986.910	20-22	20.05-22.05	WP
ASW0246	Z4-L1	1/11/2017	236635.004	475950.570	20-22	20.35-22.35	WP
ASW0247	Z4-L2	1/10/2017	236654.271	476050.820	35-37	35.1-37.1	BP
ASW0248	Z4-L2	1/12/2017	236663.124	476050.082	35-37	35.27-37.27	WP
ASW0249	Z4-L2	1/12/2017	236653.795	476043.436	35-37	35.3-37.3	WP
ASW0250	Z4-L2	1/19/2017	236664.843	476038.588	35-37	35-37	WP
ASW0251	Z4-L2	1/19/2017	236658.764	476034.450	35-37	35.2-37.2	WP
ASW0252	Z4-L2	1/17/2017	236565.474	476032.439	35-37	35.1-37.1	BP
ASW0253	Z4-L2	1/17/2017	236572.101	476031.369	35-37	34.9-36.9	BP
ASW0254	Z4-L2	1/17/2017	236581.777	476029.848	35-37	35-37	BP
ASW0255	Z4-L2	1/17/2017	236566.394	476023.774	35-37	35-37	BP
ASW0256	Z4-L2	01/17/2017	236576.994	476023.210	35-37	35.2-37.2	BP
ASW0257	Z4-L2	01/17/2017	236587.088	476023.401	35-37	35.1-37.1	BP
ASW0258	Z4-L2	01/17/2017	236573.611	476019.211	35-37	35.3-37.3	BP
ASW0259	Z4-L2	01/16/2017	236575.951	476008.487	35-37	35-37	BP
ASW0260	Z4-L2	01/16/2017	236585.175	476013.169	35-37	35-37	BP
ASW0261	Z4-L2	01/13/2017	236596.157	476020.175	35-37	35.1-37.1	BP
ASW0262	Z4-L2	01/16/2017	236580.968	476006.625	35-37	35.1-37.1	BP
ASW0263	Z4-L2	01/16/2017	236592.164	476008.951	35-37	35-37	BP
ASW0264	Z4-L2	01/13/2017	236597.759	476007.866	35-37	35.1-37.1	BP
ASW0265	Z4-L2	01/13/2017	236603.882	476015.661	35-37	35.37-37.37	BP
ASW0266	Z4-L2	01/16/2017	236597.995	475997.300	35-37	34.9-36.9	BP
ASW0267	Z4-L2	01/13/2017	236603.169	476000.081	35-37	35.07-37.07	BP

Table 4-1. Air Sparge Well Construction Details
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Air Sparge Well ID	Operational Location (Zone-Leg)	Date Installed	Easting (m)	Northing (m)	Proposed Screen Interval (ft BLS)	Installed Screen Interval (ft BLS)	Completion Type
ASW0268	Z4-L2	01/09/2017	236609.850	476008.088	35-37	35.42-37.42	BP
ASW0269	Z4-L2	01/10/2017	236615.369	476008.266	35-37	34.8-36.8	BP
ASW0270	Z4-L2	01/12/2017	236608.235	475995.516	35-37	35.13-37.13	BP
ASW0271	Z4-L2	01/10/2017	236614.575	475999.692	35-37	35.2-37.2	BP
ASW0272	Z4-L2	01/10/2017	236623.547	476003.503	35-37	35-37	BG
ASW0273	Z4-L2	01/10/2017	236616.028	475988.650	35-37	35-37	BP
ASW0274	Z4-L2	01/12/2017	236624.184	475995.017	35-37	34.97-36.97	WP
ASW0275	Z4-L2	01/11/2017	236634.344	475995.326	35-37	34.87-36.87	WP
ASW0276	Z4-L2	01/12/2017	236625.373	475985.243	35-37	35.57-37.57	WP
ASW0277	Z4-L2	01/11/2017	236634.088	475989.280	35-37	34.1-36.1	WP
ASW0278	Z4-L2	01/10/2017	236640.774	475988.895	35-37	34.8-36.8	WP
ASW0279	Z4-L2	01/25/2017	236641.092	475983.655	35-37	35.3-37.3	WP

Notes:

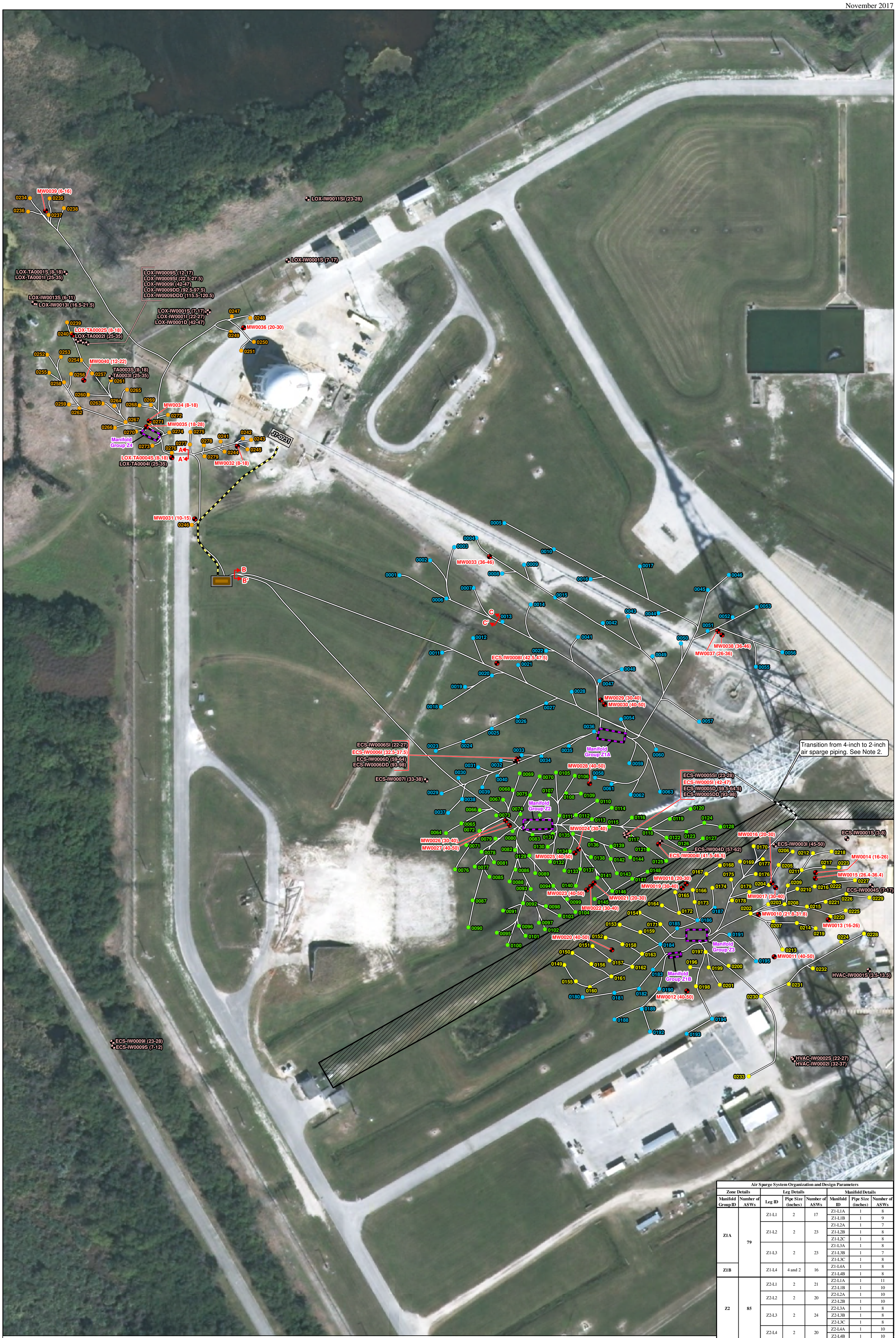
1. ft BLS indicates feet below land surface.
2. All air sparge wells are 2-inch Schedule 40 polyvinyl chloride (PVC).
3. All air sparge screens are 2-inch Schedule 40 PVC 0.01 slotted screen with a 1-foot solid sump.
4. Easting and northing provided in State Plane North American Datum 1983 Florida East Meters (m).
5. Easting and northing collected with a GPS with sub-centimeter accuracy.
6. Completion types: BP = buried PVC; BG = buried galvanized; WP = well pad.

Table 4-2. Air Sparge System Organization and Design Parameters
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Zone Details			Leg Details				Manifold Details	
Zone ID	**Number of ASWs**	**Estimated Flow Range (4 to 6 scfm per ASW)**	**Leg ID (Zone-Leg)**	**Number of ASWs**	**Estimated Flow Range (4 to 6 scfm per ASW)**	**Approximate Screen Interval**	**Manifold ID**	**Number of ASWs**
Z1	**79**	**316 to 474**	Z1-L1	17	68 to 102	57-59	Z1-L1A	8
							Z1-L1B	9
			Z1-L2	23	92 to 138	57-59	Z1-L2A	7
							Z1-L2B	8
							Z1-L2C	8
			Z1-L3	23	92 to 138	57-59	Z1-L3A	8
							Z1-L3B	7
							Z1-L3C	8
			Z1-L4	16	64 to 96	57-59	Z1-L4A	8
							Z1-L4B	8
Z2	**85**	**340 to 510**	Z2-L1	21	84 to 126	57-59	Z2-L1A	11
							Z2-L1B	10
			Z2-L2	20	80 to 120	57-59	Z2-L2A	10
							Z2-L2B	10
			Z2-L3	24	96 to 144	57-59	Z2-L3A	8
							Z2-L3B	8
							Z2-L3C	8
			Z2-L4	20	80 to 120	57-59	Z2-L4A	10
							Z2-L4B	10
Z3	**69**	**276 to 414**	Z3-L1	15	60 to 90	57-59	Z3-L1A	7
							Z3-L1B	8
			Z3-L2	22	88 to 132	57-59	Z3-L2A	8
							Z3-L2B	7
							Z3-L2C	7
			Z3-L3	32	128 to 192	50-52	Z3-L3A	11
							Z3-L3B	10
							Z3-L3C	11
Z4	**46**	**184 to 276**	Z4-L1	13	52 to 78	20-22	Z4-L1A	6
							Z4-L1B	7
			Z4-L2	33	132 to 198	35-37	Z4-L2A	11
							Z4-L2B	11
							Z4-L2C	11

Notes:

1. ASW indicates air sparge well.
2. scfm indicates standard cubic feet per minute.
3. The approximate screen interval provided is the approximate screen interval of most of ASWs in a given Leg.
4. Zone 1 is separated into two manifold groups: Z1A and Z1B. Z1A (Legs Z1-L1, Z1-L2, and Z1-L3) is located north of the ventilation tunnel, and Z1B (Leg Z1-L4) is located south of the ventilation tunnel.



Legend

- Zone 1 Air Sparge Well Location
- Zone 2 Air Sparge Well Location
- Zone 3 Air Sparge Well Location
- Zone 4 Air Sparge Well Location
- Performance Monitoring Well Location (showing screen interval, ft BLS)
- Other Monitoring Well Location (showing screen interval, ft BLS)
- Approximate Location of Electrical Line
- Cross-Section (shown on Figure 4-4)
- Approximate Location of Trenches Containing Air Sparge Piping*
- Approximate Location of Above Ground Air Sparge Piping
- Approximate Footprint of Concrete Manifold
- Approximate Location of Gravel Pad
- Air Sparge Trailer Location
- Ventilation Tunnel

Notes:
1. * indicates that varying amounts and sizes of air sparge piping were installed within the trenches presented on Figure 4-1, depending on the location of the trench.
2. Pipe diameter for legs Z1-L4, Z3-L1, Z3-L2, and Z3-L3 changed from 4-inch to 2-inch when the piping transitioned above grade, north of the ventilation tunnel (2-inch piping above ventilation tunnel and south of ventilation tunnel).
3. ASW indicates air sparge well.
4. ft BLS indicates feet below land surface.
5. All monitoring well locations have prefix of "39B-".
6. Prefix for air sparge well (ASW) locations is "39B-ASW".
7. Source of 2015 Aerial, FDOT Surveying and Mapping Office.

N

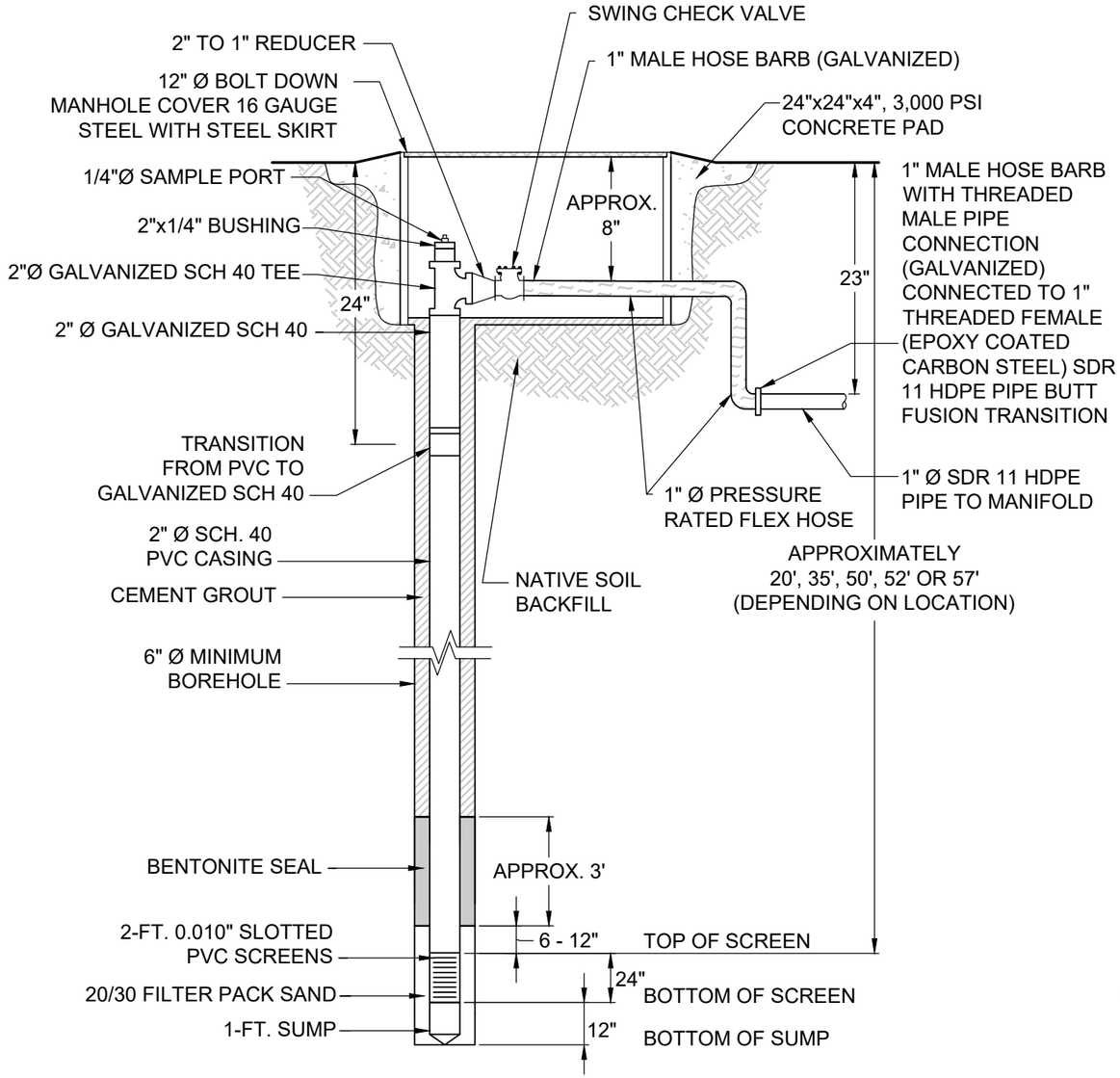
70 35 0 70 Feet

Air Sparge System Organization and Design Parameters

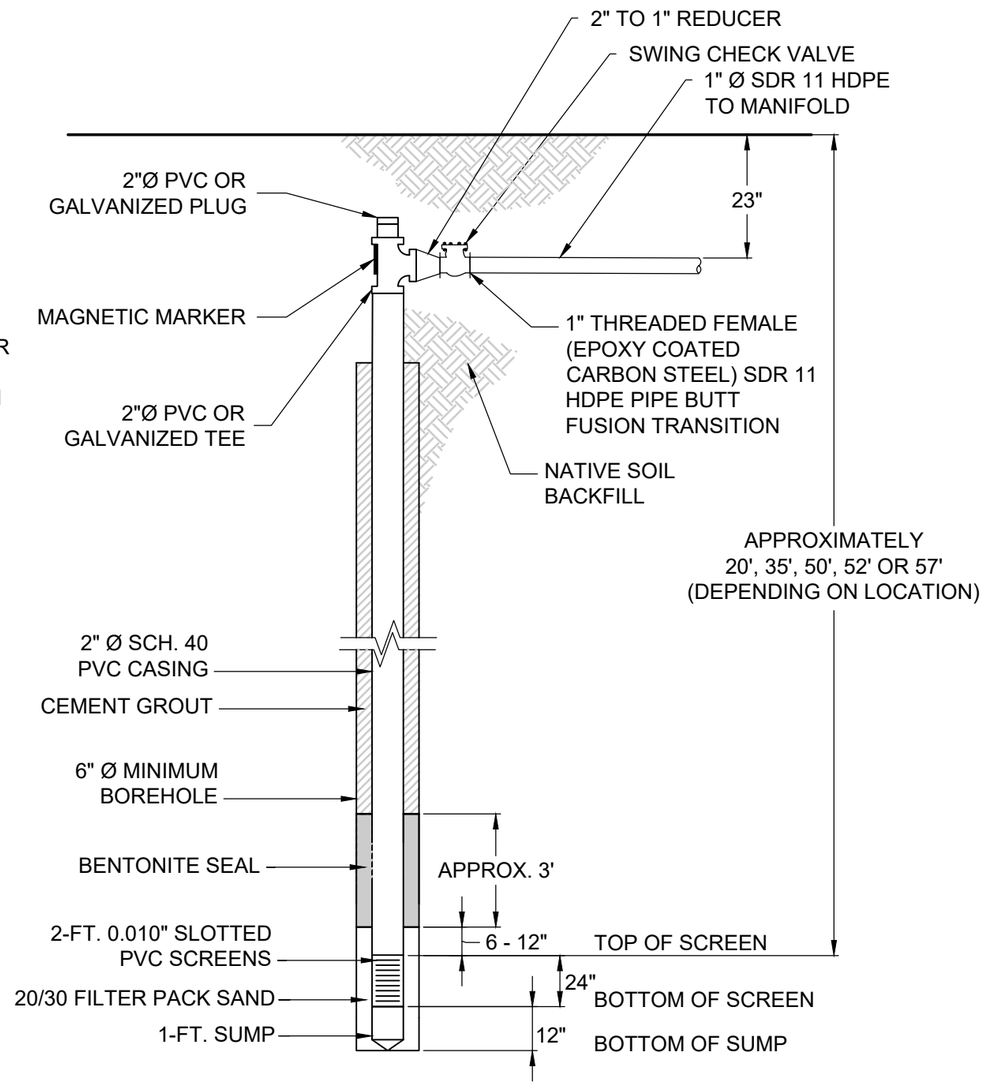
Zone Details		Leg Details			Manifold Details		
Manifold Group ID	Number of ASWs	Leg ID	Pipe Size (inches)	Number of ASWs	Manifold ID	Pipe Size (inches)	Number of ASWs
Z1A	79	Z1-L1	2	17	Z1-L1A	1	8
					Z1-L1B	1	9
		Z1-L2	2	23	Z1-L2A	1	7
					Z1-L2B	1	8
					Z1-L2C	1	8
		Z1-L3	2	23	Z1-L3A	1	8
					Z1-L3B	1	7
					Z1-L3C	1	8
Z1B		Z1-L4	4 and 2	16	Z1-L4A	1	8
					Z1-L4B	1	8
Z2	85	Z2-L1	2	21	Z2-L1A	1	11
					Z2-L1B	1	10
		Z2-L2	2	20	Z2-L2A	1	10
					Z2-L2B	1	10
		Z2-L3	2	24	Z2-L3A	1	8
					Z2-L3B	1	8
					Z2-L3C	1	8
		Z2-L4	2	20	Z2-L4A	1	10
					Z2-L4B	1	10
Z3	69	Z3-L1	4 and 2	15	Z3-L1A	1	7
					Z3-L1B	1	8
		Z3-L2	4 and 2	22	Z3-L2A	1	8
					Z3-L2B	1	7
					Z3-L2C	1	7
		Z3-L3	4 and 2	32	Z3-L3A	1	11
					Z3-L3B	1	10
					Z3-L3C	1	11
Z4	46	Z4-L1	2	13	Z4-L1A	1	6
					Z4-L1B	1	7
		Z4-L2	2	33	Z4-L2A	1	11
					Z4-L2B	1	11
					Z4-L2C	1	11

Path: (Titusville-01\DATA) T:\FR1352\MXDs\201612_IWP\LC39B_AS_System.mxd 16 November 2017 MAH

Figure 4-1
As-Built Air Sparge System Layout
4-17/4-18



TYPICAL AIR SPARGE WELL WITH WELL PAD COMPLETION
NOT TO SCALE



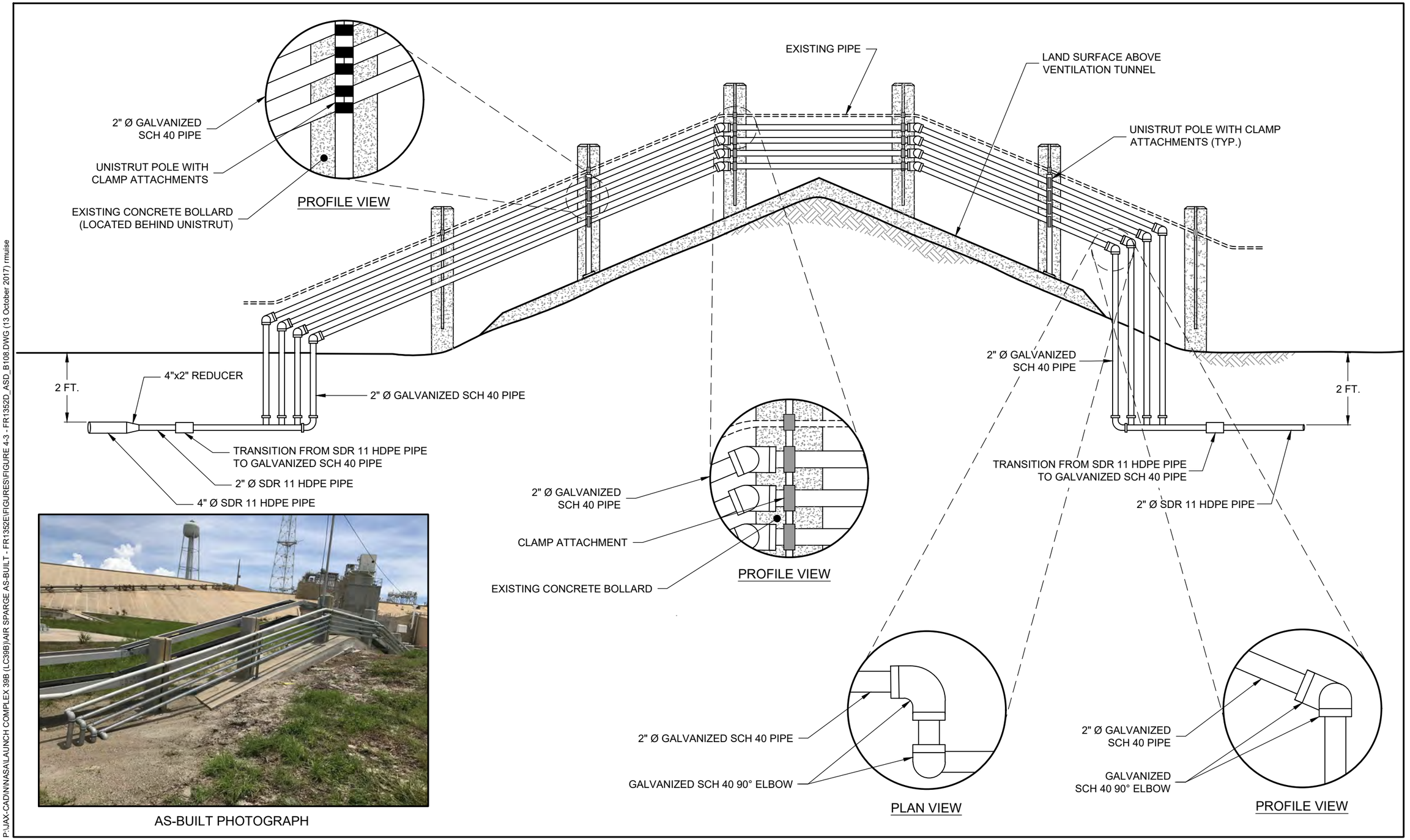
TYPICAL AIR SPARGE WELL WITHOUT WELL PAD COMPLETION
NOT TO SCALE

NOTES:

1. DEPTH OF SPARGE WELL SCREENS ARE PRESENTED IN FEET BELOW LAND SURFACE (FT BLS).
2. LOCATION AND SPECIFIC SCREEN INTERVAL FOR AIR SPARGE WELLS PROVIDED IN TABLE 4-1.

P:\JAX-CAD\NNASA\LAUNCH COMPLEX 39B (LC39B)\AIR SPARGE AS-BUILT - FR1352E\FIGURES\FIGURE 4-2 - FR1352D_ASD_B102.DWG (16 October 2017) rmuise

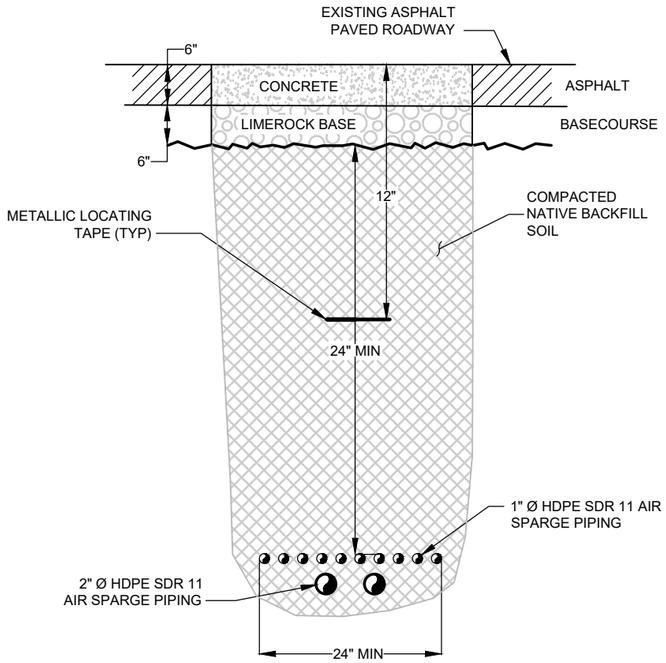
Figure 4-2
As-Built Air Sparge Well Construction Details



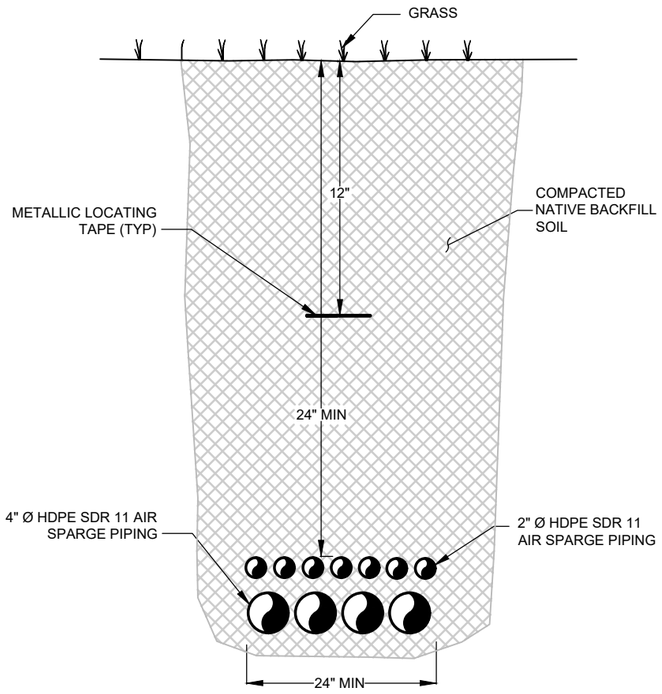
AS-BUILT PHOTOGRAPH

P:\JAX-CAD\NASA\LAUNCH COMPLEX 39B (LC39B)\AIR SPARGE AS-BUILT - FR1352E\FIGURES\FIGURE 4-3 - FR1352D_ASD_B108.DWG (13 October 2017) rmuise

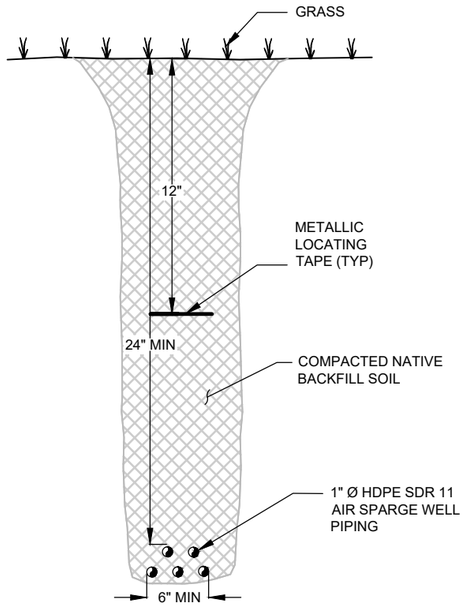
Figure 4-3
As-Built Ventilation Tunnel Piping Detail



CROSS SECTION A-A'
TYPICAL DETAIL FOR PIPING INSTALLED
UNDER ROADWAYS
NOT TO SCALE



CROSS SECTION B-B'
TYPICAL DETAIL FOR LEG PIPING INSTALLED
BENEATH GRASS
NOT TO SCALE



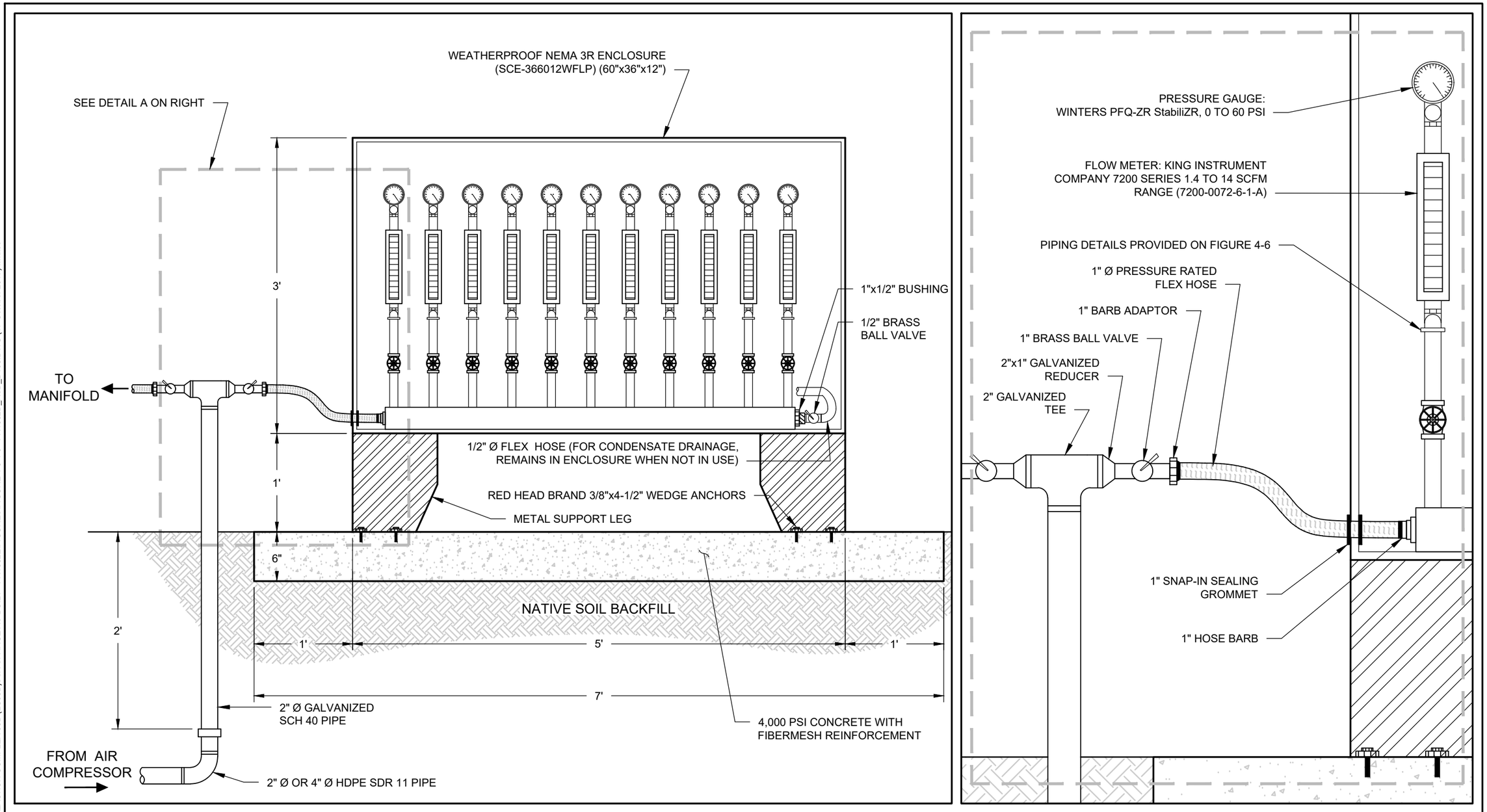
CROSS SECTION C-C'
TYPICAL DETAIL FOR AIR SPARGE
WELL PIPING INSTALLED BENEATH GRASS
NOT TO SCALE

NOTES:

1. NUMBER OF AIR SPARGE PIPES INSTALLED IN TRENCHES VARY.
2. CROSS SECTIONS ARE SHOWN ON FIGURE 4-1.
3. CONCRETE USED WAS 4,000 POUNDS PER SQUARE INCH FIBERMESH.
4. LIMEROCK WAS COMPACTED TO A MINIMUM 98% PROCTOR.

P:\JAX-CAD\NINASA\LAUNCH COMPLEX 39B (LC39B)\AIR SPARGE AS-BUILT - FR1352E\FIGURES\FIGURE 4-4 - FR1352D_ASD_B105.DWG (16 October 2017) rmuise

Figure 4-4
As-Built Trenching Details



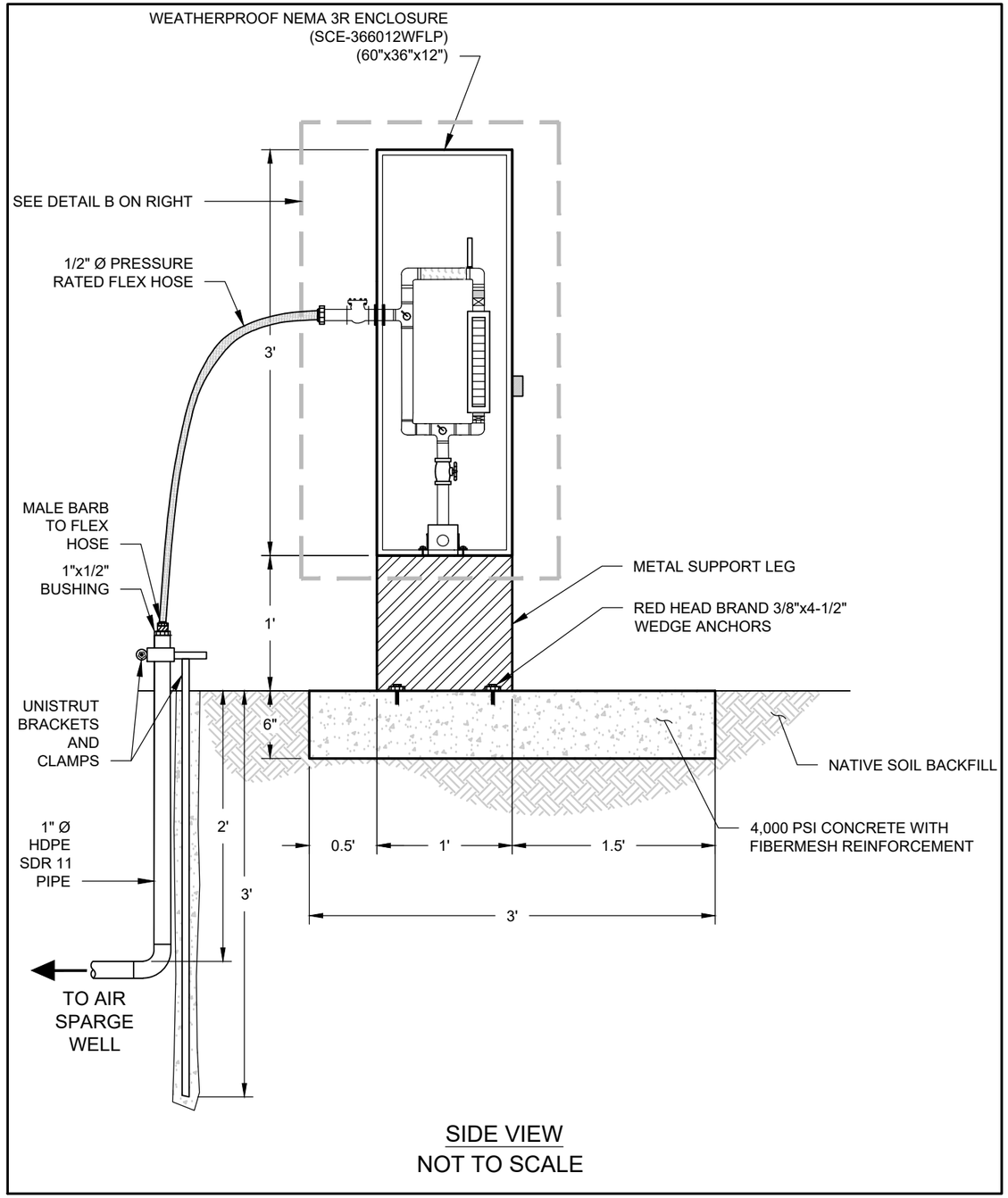
FRONT VIEW
NOT TO SCALE

DETAIL A - FRONT VIEW
NOT TO SCALE

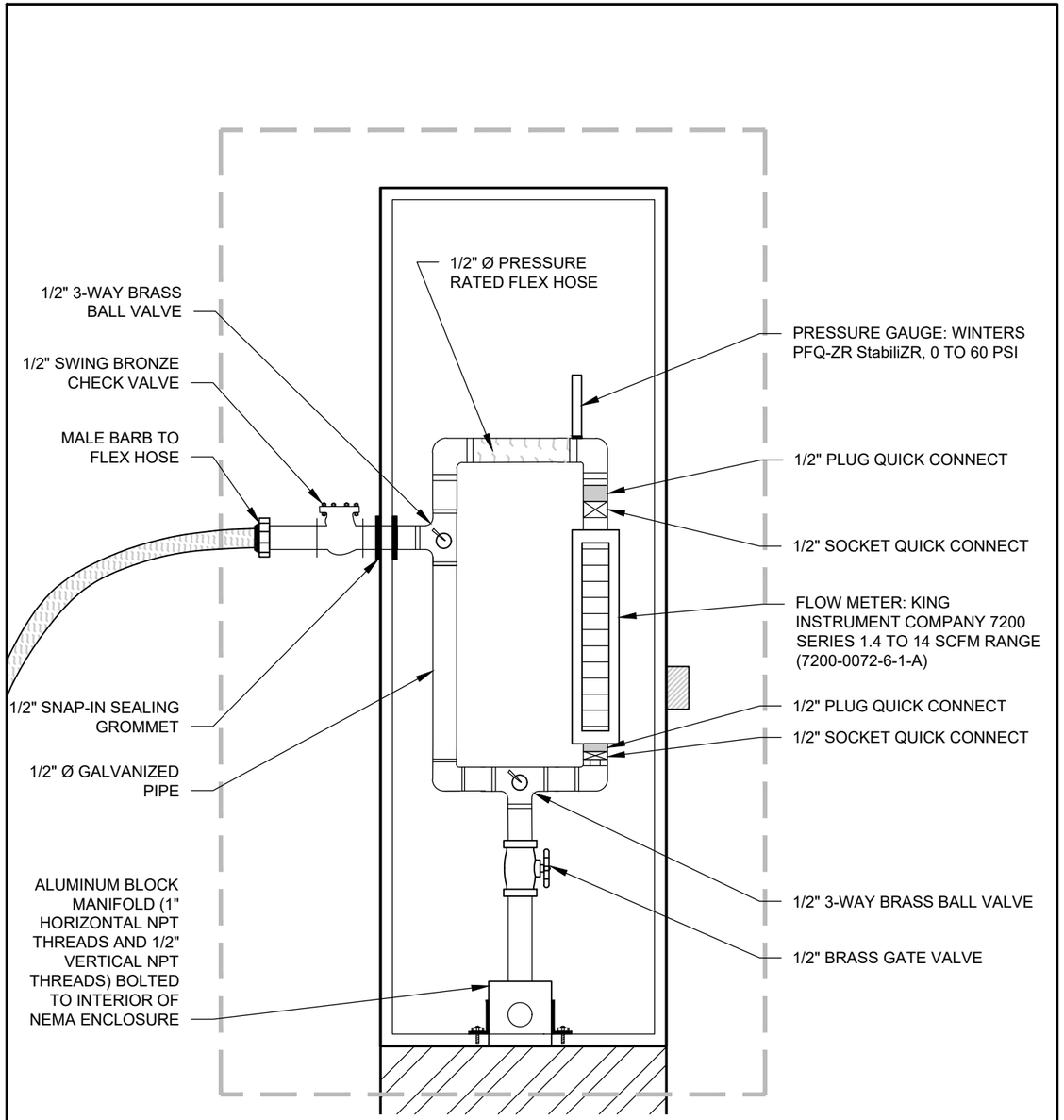
P:\JAX-CAD\NINASA\LAUNCH COMPLEX 39B (LC39B)\AIR SPARGE AS-BUILT - FR1352E\FIGURES\FIGURE 4-5 4-6 - FR1352D_ASD_B103.DWG (17 October 2017) rmuise

Figure 4-5
As-Built Air Distribution Manifold Construction Detail - Front View

P:\JAX-CAD\NNASA\LAUNCH COMPLEX 39B (LC39B)\AIR SPARGE AS-BUILT - FR1352E\FIGURES\FIGURE 4-5 4-6 - FR1352D_ASD_B103.DWG (17 October 2017) rmuise



SIDE VIEW
NOT TO SCALE



DETAIL B - SIDE VIEW
NOT TO SCALE

Figure 4-6
As-Built Air Distribution Manifold Construction Detail - Side View

SECTION V

AIR COMPRESSOR SYSTEM PROCUREMENT AND INSTALLATION

5.1 OVERVIEW

This section provides details of the air compressor system procurement and installation, which includes details of the: (i) final air compressor system design; (ii) air compressor system installation; (iii) electrical line installation for the air compressor system; (iv) air compressor system checkout and acceptance; and (v) any air compressor system deviations from the IWP.

Field forms documenting the air compressor system installation, acceptance, and checkout activities are provided in Appendix B or Appendix H, the O&M Manual is included in Appendix K, and system checkout and acceptance documents are included in Appendix L.

5.2 AIR COMPRESSOR SYSTEM DESIGN

The air compressor system was fabricated by Mid-Atlantic Environmental Equipment, Inc. (MAEE) and the Process and Instrumentation Diagram (P&ID) for the system is provided on Figure 5-1. The air compressor system is housed in a trailer that is approximately 24-ft long, 8-ft wide, and 8-ft tall. Details of the major components of the air compressor system are provided below.

- The air compressor is a pre-packaged system that has an Atlas Copco GA75 VSD variable speed, 100 hp, oil-injected rotary screw air compressor capable of approximately 530 scfm of air against 102 psi of pressure. In addition, the pre-packaged system contains an oil cooler, aftercooler, and an air dryer.
- A 240-gal receiver tank is installed after the air compressor.
- A series of in-line air filters are installed after the receiver tank to remove particulates and oil from the air stream. Following the flow of air, a particulate filter (Atlas Copco DD310+), an oil filter (Atlas Copco PD310+), and an oil separator (Atlas Copco QD310+) are installed.
- A condensate management system (Atlas Copco OSC1200) is installed to manage condensate collected from the 240-gal receiver tank and the in-line filters.
- A 13-leg manifold with CDI 5400 air flow meters and Wilkerson R40 pressure regulators control the flow of air to the air sparge legs. There are four extra legs without flow meters and pressure regulates that are installed and that are currently not being utilized.

- A control panel is used to control the air sparge system operation. The control panel is comprised of a MicroLogix programmable logic controller (PLC; 1766-L32BWA) and a C-More human-machine interface (HMI; EA9-T15CL).

Design documents were provided to Geosyntec for review by MAEE, prior to the delivery of the air compressor system to the site. The documents were reviewed and approved in January and February 2017. Manuals for each of the major components listed and drawings for the system are provided in the O&M Manual (Appendix K).

5.3 AIR COMPRESSOR SYSTEM INSTALLATION

The air compressor system was delivered to LC39B by MAEE on 5 June 2017. The air compressor system was staged on a pad constructed out of ASTM International #57 stone (load ticket included in Appendix J) that was placed on top of a geotextile. The trailer was then anchored to the ground following the Trailer/Equipment Tiedown Plan for the John F. Kennedy Space Center [NASA 2001] guidelines prior to system checkout and acceptance on 26 June 2017.

5.4 ELECTRICAL LINE INSTALLATION

The power for the air compressor system was provided by tying into an existing power source at the Electrical Equipment Building (J7-0231). The electric line installation activities occurred between 16 and 27 February 2017 and 5 and 26 June 2017. All electrical work was completed by MIL-CON Electric Company (Mil-Con), a licensed electrical subcontractor, and all trenching and conduit installation work was completed by FECC, Inc. The activities in February 2017 included: (i) installation of a General Electric, three-pole, 480 volt, 400-amp, main disconnect adjacent to the air compressor system with an outdoor Leviton VerifyEye™ Series 3500 electrical meter installed on the wooden frame that supports the main disconnect; (ii) installation of electrical conduit from the main disconnect to the Electrical Equipment Building (J7-0231); and (iii) installation of 4/0-gauge wire through the electric conduit to a 225-A breaker in the Electrical Equipment Building (J7-0231). The activities in June 2017 included the installation of electrical conduit between the main disconnect and the air compressor system (using a combination of rigid and flexible conduit). Mil-Con connected the 400-amp main disconnect and the air compressor system on 26 June 2017, during the system checkout and acceptance.

5.5 AIR COMPRESSOR SYSTEM CHECKOUT AND ACCEPTANCE

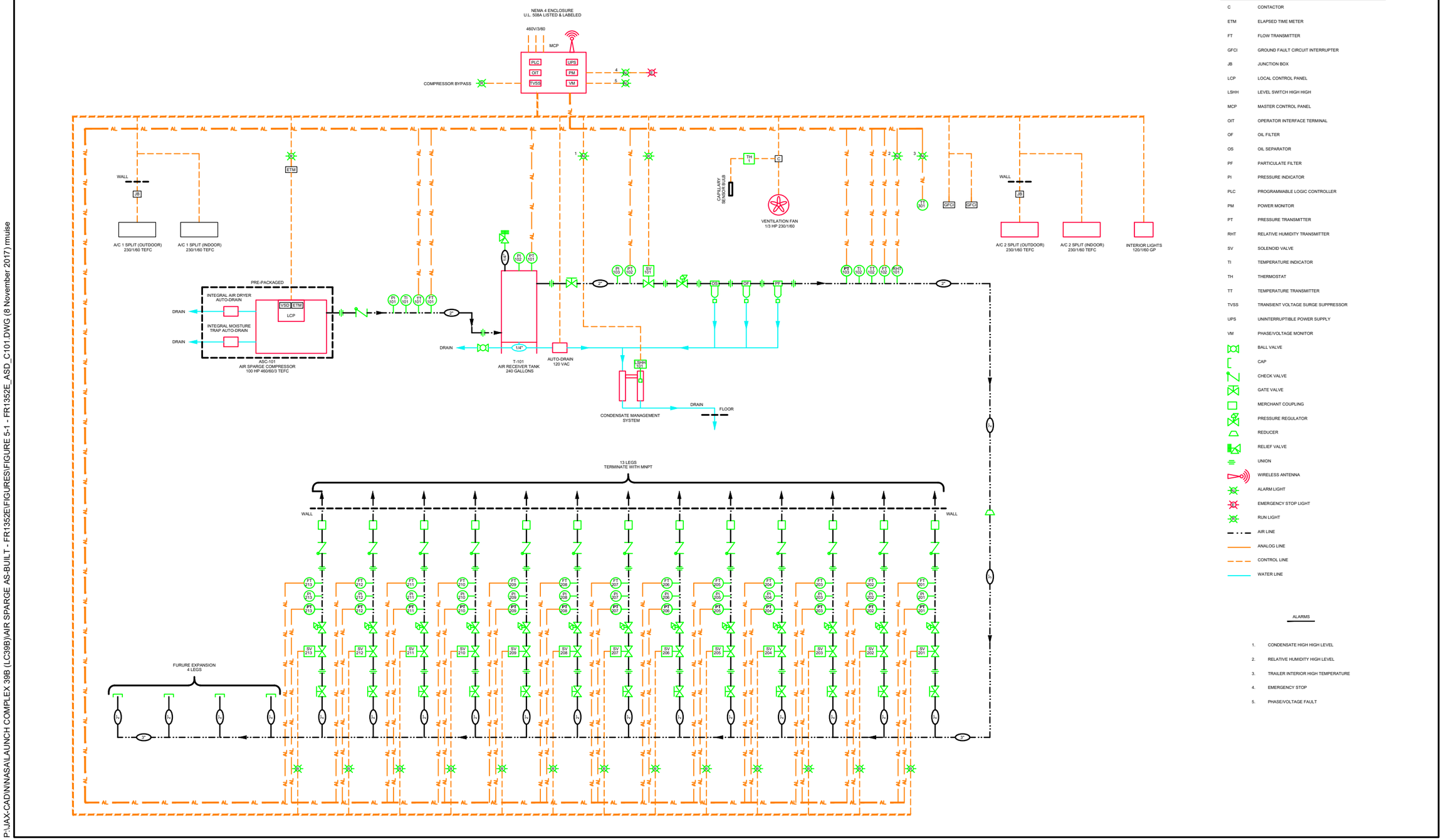
An air compressor system checkout was performed by the air compressor manufacturer (Atlas Copco) on 9 May 2017 at the MAEE fabrication shop. The off-site checkout focused on the operation of the air compressor and included the collection of initial operational readings (e.g. operating temperature, pressures, etc.), verification of electrical readings (e.g. operating voltage,

frequency, etc.), verification of operation (e.g. operating at variable speeds, checking various fan operations), and a general inspection. The air sparge system passed the off-site checkout.

An on-site air compressor system checkout occurred on 26 June 2017 at LC39B, before system startup. An MAEE representative (with Geosyntec personnel oversight) performed the startup testing to verify the functionality of the electrical, control, and mechanical components to confirm that the system operated as designed. In addition, the P&ID was verified to match air compressor system construction, the air compressor system was checked for leaks and loose wires, alarms were manually tested, operation of all equipment was checked, and remote access was tested. There were no issues with the air compressor system operation. A completed checklist from the MAEE startup testing is provided in Appendix L.

5.6 AIR COMPRESSOR SYSTEM MODIFICATIONS

There were no deviations from the Air Sparge IWP [NASA 2017a] in regard to the air compressor system.



LEGEND

C	CONTACTOR
ETM	ELAPSED TIME METER
FT	FLOW TRANSMITTER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
JB	JUNCTION BOX
LCP	LOCAL CONTROL PANEL
LSHH	LEVEL SWITCH HIGH HIGH
MCP	MASTER CONTROL PANEL
OIT	OPERATOR INTERFACE TERMINAL
OF	OIL FILTER
OS	OIL SEPARATOR
PF	PARTICULATE FILTER
PI	PRESSURE INDICATOR
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PT	PRESSURE TRANSMITTER
RHT	RELATIVE HUMIDITY TRANSMITTER
SV	SOLENOID VALVE
TI	TEMPERATURE INDICATOR
TH	THERMOSTAT
TT	TEMPERATURE TRANSMITTER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UPS	UNINTERRUPTIBLE POWER SUPPLY
VM	PHASE/VOLTAGE MONITOR

BALL VALVE
CAP
CHECK VALVE
GATE VALVE
MERCHANT COUPLING
PRESSURE REGULATOR
REDUCER
RELIEF VALVE
UNION
WIRELESS ANTENNA
ALARM LIGHT
EMERGENCY STOP LIGHT
RUN LIGHT
AIR LINE
ANALOG LINE
CONTROL LINE
WATER LINE

ALARMS

1. CONDENSATE HIGH HIGH LEVEL
2. RELATIVE HUMIDITY HIGH LEVEL
3. TRAILER INTERIOR HIGH TEMPERATURE
4. EMERGENCY STOP
5. PHASE/VOLTAGE FAULT

P:\JAX-CAD\NNASA\LAUNCH COMPLEX 39B (LC39B)\AIR SPARGE AS-BUILT - FR1352E\FIGURES\FIGURE 5-1 - FR1352E_ASD_C101.DWG (8 November 2017) rmuise

Figure 5-1
As-Built Air Sparge System Process and Instrumentation Diagram

SECTION VI

AIR SPARGE SYSTEM STARTUP AND OPERATION

6.1 OVERVIEW

This section provides a summary of the air sparge system startup and the first month of O&M activities which includes details of the: (i) air compressor system operational organization; (ii) initial air sparge system startup and groundwater surfacing; (iii) results for the first four weeks of air sparge system O&M activities; (iv) completion of air sampling during air sparge system operation; and (v) completion of ventilation tunnel surveys during air sparge system operation.

Field forms documenting the air sparge system startup, groundwater surfacing, O&M activities, air sampling, and ventilation tunnel surveying are provided in Appendix B, laboratory analytical results are provided in Appendix D, RIS completion tickets are provided in Appendix E, and O&M forms from the first four, weekly O&Ms are included in Appendix M.

6.2 AIR MODELING

AERSCREEN was utilized to predict the anticipated concentrations of TCE, cDCE, and VC in the ambient air in the air sparge system treatment area. The following considerations were utilized in the development of the model.

- HS1 and HS2 were designated as the "source areas" and were converted to rectangles based off the largest width for HS2 and largest length for HS1. The areas were equal to the areas presented in the Remedial Alternatives Evaluation ADP (HS1 = 1.08 acres, HS2 = 0.16 acres) [NASA 2016a].
- Air sampling locations (AIR0001, AIR0002, AIR0003, AIR004) were utilized as the receptor locations with the following caveats:
    - air sampling location AIR0003 was modeled approximately 5-meters away from the actual sampling location because the actual sampling location is directly on top of the source area (which cannot be used in AERSCREEN); and
    - air sampling location AIR0004 was modeled as being representative of ground surface concentrations above the approximate location of the actual sampling location (AERSCREEN cannot predict concentrations below grade).
- Air sampling location AIR0005 was not selected as a receptor, since it is located below grade (in ventilation tunnel).
- It was assumed that 50% of the mass was removed from HS1 and HS2 within 30 days.
- It was assumed that there was flat terrain between the source areas and receptors.

- Default meteorology within AERSCREEN program was used (assumed the site was grassland with an average climate).

The results of the AERSCREEN model are presented in Table 6-1, which suggest that the concentration of VC in the HS2 area (AIR0003) should be close to the OEL (under the conservative input assumptions modeled). Therefore, system operation was modified so that Zone Z4 (associated with HS2) operated only at night.

6.3 SYSTEM OPERATION ORGANIZATION

The air compressor system was programmed to operate each of the four zones independently and for six hours per day. During system startup, the operation was modified from a repeating cycle where each of the four zones operated for two hours, to following the schedule provided in Table 6-2. As presented in Table 6-2, Zones Z1, Z2, and Z3 operate for two hours each on a repeating cycle from 03:00 to 21:00, and Zone Z4 operates for six hours, from 21:00 to 03:00. The change in programming was made following the results AERSCREEN results discussed in Section 6.2.

6.4 SYSTEM STARTUP

The air sparge system was started on 26 June 2017 and initial startup activities were conducted until 30 June 2016. The activities completed during the system startup included:

- operating the air sparge system and adjusting flow rates as necessary;
- recording individual air sparge well readings (flow rates and pressures) and balancing air flow;
- checking for and fixing leaks in the air sparge system and infrastructure;
- checking for and addressing initial groundwater surfacing caused by the air sparge system operation;
- grouting and capping bioremediation injections wells in the northwest portion of the site; and
- installing safety fence and signage around the air sparge system operational areas.

During the air sparge system startup, groundwater surfacing was observed at select locations either at grade or from monitoring wells whose caps had come loose. Following two weeks of operation, these issues were addressed from 17 through 21 July 2017 after the system was turned off on 14 July 2017 (turned off the system to allow for subsurface to depressurize). To address the groundwater surfacing issues: (i) well caps were dried and then reinstalled; (ii) and areas at grade where groundwater surfacing was present were dug out by hand and Portland cement was placed in the dug out area. After these activities were completed the air sparge system was

restarted on 24 July 2017.

6.5 SYSTEM O&M SCHEDULE

Air sparge system O&M activities were performed weekly after system startup (except for the one-week downtime to address groundwater surfacing) during the weeks of 3, 10, 24, and 31 July 2017. Air sparge system operational readings collected during routine O&M visits included:

- air compressor system during each zone's (Z1, Z2, Z3, and Z4) operation, including:
  - system amperage;
  - percent compressor operating capacity;
  - pressure before, in, and after the receiver tank;
  - flow before and after the receiver tank;
  - temperature before and after the receiver tank;
  - relative humidity during each zone's operation;
  - flow and pressure at each leg;
- flow and pressure at each air sparge well;
- air temperature at an air distribution manifold in each zone;
- kilowatt hour reading; and
- hour meter reading.

Along with air sparge system operational parameters, air sampling activities, and ventilation tunnel surveys were conducted during each O&M visit in the same manner as described in Sections 3.3.2 and 3.3.3, respectively.

6.6 SYSTEM TELEMETRY

In addition to O&M visits, the system was monitored at a minimum of weekly using telemetry. The telemetric interface can be accessed and controlled via a remote HMI. Telemetric monitoring consists of the collection of system operational information which includes the zone that is operating, system pressure (collected after the receiver tank), system air flow, and alarm status. Results from the first month of system operation (through 4 August 2017) are included in Table 6-3.

6.7 SYSTEM OPERATION – MONTH 1

Results from the Month 1 system O&M activities, air sampling, and ventilation tunnel surveys are provided in the following sections.

6.7.1 SUMMARY OF SYSTEM OPERATIONAL DATA. Results of the Month 1 O&M activities are documented in O&M forms provided in Appendix M. Air compressor system and air sparge well operational data from Month 1 O&M activities are presented in Tables 6-4 through 6-9.

A summary of the air sparge operational readings during Month 1 O&Ms is provided below.

- Air flow rate to Zone Z1 air sparge wells ranged from 2 to 7 scfm (average flow of 4.1 scfm) with pressure ranging from 22 to 33 psi (average pressure of 26.9 psi).
- Air flow rate to Zone Z2 air sparge wells ranged from 2 to 7 scfm (average flow of 4.1 scfm) with pressure ranging from 24 to 30 psi (average pressure of 28.2 psi).
- Air flow rate to Zone Z3 air sparge wells ranged from 2 to 7 scfm (average flow of 4.1 scfm) with pressure ranging from 17 to 30 psi (average pressure of 27.0 psi).
- Air flow rate to Zone Z4 air sparge wells ranged from 2 to 8 scfm (average flow of 4.3 scfm) with pressure ranging from 11 to 30 psi (average pressure of 21.0 psi).

The operational parameters measured for the air sparge system during the Month 1 O&M activities were within the expected operating parameters. As the air sparge system continues to operate and groundwater mounding dissipates, the air flow rate to individual air sparge wells may be increased to provide the target flow rate of 5 scfm, as appropriate.

6.7.2 SUMMARY OF AIR SAMPLING DATA. Results from air samples collected during the Month 1 O&M activities (6, 13, and 27 July, and 3 August 2017) are provided in Table 3-5, and are summarized below.

TCE, cDCE and VC were not detected in samples collected from air sampling locations AIR0001, AIR0002, AIR0003, AIR0004, and AIR0005 during the four Month 1 O&M events, with the exception of: (i) the cDCE and VC detections from air sampling location AIR0003 on 6 July 2017 (1.3 and 0.69 $\mu g/m^3$, respectively); and (ii) the TCE detection from air sampling location AIR0005 (1.3 $\mu g/m^3$) on 6 July 2017. When the detections were converted to ppmv (approximately 0.0003 ppmv for all detections), the values were below their respective Lowest OELs.

6.7.3 SUMMARY OF VENTILATION TUNNEL SURVEY RESULTS. Ventilation tunnel surveys were conducted during the Month 1 O&M activities (6, 13, and 27 July, and 3 August 2017). During the surveys, the ventilation tunnel was inspected visually to evaluate how the air sparge system's operation was affecting the ventilation tunnel. Inside the ventilation tunnel, indoor air was monitored with both an Ion Science Pho-Check Tiger PID and a RAE Systems MultiRAE Lite multi-gas meter; neither meter recorded readings that were indicative of a potentially hazardous environment (less than 1 parts per million measured by the PID). There were no observations made during the surveys that indicated the air sparge system was having impacts on the ventilation tunnel (e.g. no increases in standing water, no new cracks observed, etc.).

Also during the surveys, two water samples were collected during each event from separate pools of water encountered during the surveys. The samples were analyzed for CVOCs (TCE, cDCE, and VC only) using EPA Method 8260B by AEL. No CVOCs were detected in those samples, and the results are presented in Table 3-6.

Table 6-1. AERSCREEN Results
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Location	Concentration		
	Trichloroethene	*cis* -1,2-Dichloroethene	Vinyl Chloride
Units	ppmv	ppmv	ppmv
OEL	10	200	1
AIR0001 - Hot Spot 1	0.0452	0.0203	0.1293
AIR0002 - Smoking Area	0.0445	0.02	0.1272
AIR0003* - Hot Spot 2	--	0.5871	0.3967
AIR0004 - Ground Surface of Ventilation Tunnel	0.05	0.0224	0.1429

Notes:

1. * indicates that the modeled location was approximately 5 meters from the sample location listed due to limitations of the AERSCREEN model.
2. OEL indicates Lowest Occupational Exposure Limit.
3. ppmv indicates parts per million by volume.
4. AERSCREEN model unable to predict concentrations within the ventilation tunnel.

Table 6-2. Air Compressor System Operation Schedule
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Time of Operation	Zone Operating	Solenoid Valves Open
03:00 to 05:00	Zone 1	205, 206, 207, 208
05:00 to 07:00	Zone 2	201, 202, 203, 204
07:00 to 09:00	Zone 3	209, 210, 211
09:00 to 11:00	Zone 1	205, 206, 207, 208
11:00 to 13:00	Zone 2	201, 202, 203, 204
13:00 to 15:00	Zone 3	209, 210, 211
15:00 to 17:00	Zone 1	205, 206, 207, 208
17:00 to 19:00	Zone 2	201, 202, 203, 204
19:00 to 21:00	Zone 3	209, 210, 211
21:00 to 03:00	Zone 4	212, 213

Notes:

1. Numbers presented in the "Solenoid Valves Open" column are the solenoid valve IDs, as presented on the Process and Instrumentation Diagram (Figure 5-1).

Table 6-3. System Telemetric Monitoring
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

Date/Time System Sas Checked		System Operational Yes/No	Identify Any Operational Abnormalities and Corrective Action Taken to Restore Operation
06/26/2017	---	Yes	System started on 6/26/2017. System startup activities completed through 6/30/2017. From 6/30/2017 through 7/2/2017 only Zone 1 operated. At approximately 15:30 on 7/2/2017 the system was programmed to operate each Zone for 2 hours in sequential order. Zone 4 turned off at 22:30 on 7/4/2017 until the weekend so it did not operate while Kennedy Space Center employees were on site.
07/10/2017	---	Yes	Telemetry not operational 7/10/2017, fixed on 7/11/2017.
07/14/2017	---	No	System turned off on 7/14/2017 in preparation for addressing groundwater mounding.
07/21/2017	---	No	System remains off to provide time for grout to cure from activities completed during the week to address groundwater mounding.
07/28/2017	17:30	Yes	System restarted on 7/24/2017 at 08:50 following site maintenance activities. System operation summary: Zone 2 operating at 44.0 psi (PT-103) with 326 scfm (FT-101).
08/04/2017	18:20	Yes	System operation summary: Zone 2 operating at 39.9 psi (PT-103) with 400 scfm (FT-101).

Notes:

1. psi indicates pounds per square inch.
2. scfm indicates standard cubic feet per minute.
3. --- indicates the reading was not collected.

Table 6-4. Air Compressor System Electric Meter Readings, Hour Meter Readings, and Air Distribution Manifold Air Temperatures
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

O&M Date	Hour Meter (hours)	Run Time (hours)	Electric Meter (kWh)	Manifold Air Temperature (°F)			
				Zone 1	Zone 2	Zone 3	Zone 4
07/06/2017	236.2	236.2	40,672	85	85	85	85
07/13/2017	380.5	144.3	72,951	92.3	90	75.4	90.9
07/27/2017	555.6	175.1	113,976	87	87	86	84
08/03/2017	721.6	166.0	128,873	89	89	89	89

Notes:

1. kWh indicates kilowatt hours.
2. °F indicates degrees Fahrenheit.
3. Manifold air temperatures are collected by measuring the temperature of the air from a bleed valve in one air sparge distribution manifold per zone during each event. The results are used to estimate air flow rates, in standard cubic feet per minute, at each air sparge well.

Table 6-5. Air Compressor System Operational Readings
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

O&M Date	Zone 1 Air Compressor System Readings												Zone 1 Leg Readings							
				Post-Compressor				Post-Receiver Tank					Leg Z1-L1		Leg Z1-L2		Leg Z1-L3		Leg Z1-L4	
	Amps	Operating Capacity	Indoor Temperature (TT-301)	Pressure (PT-101)	Flow (FT-101)	Temperature (TT-101)	Pressure (PT-102)	Pressure (PT-103)	Flow (FT-102)	Temperature (TT-102)	Relative Humidity (RHT-101)		Pressure (PI-205)	Flow (FT-205)	Pressure (PI-206)	Flow (FT-206)	Pressure (PI-207)	Flow (FT-207)	Pressure (PI-208)	Flow (FT-208)
		(%)	(°F)	(psi)	(scfm)	(°F)	(psi)	(psi)	(scfm)	(°F)	(%)		(psi)	(scfm)	(psi)	(scfm)	(psi)	(scfm)	(psi)	(scfm)
07/06/2017	NM	NM	90.2	103.9	453	95.2	103.5	56.7	365	92.6	63		33	102	29	131	28	116	30	131
07/13/2017	NM	NM	89.3	104	370	110.0	104.0	48.0	320	93.2	71		30	119	30	111	29	93	29	108
07/27/2017	57	60	80.9	103.8	736	86.2	103.8	43.6	285	85.4	83		36	89	28	95	28	91	28	80
08/03/2017	75	66	87.0	103.8	335	98.2	103.9	47.0	261	94.6	61		36	97	29	96	26	77	30	85

O&M Date	Zone 2 Air Compressor System Readings												Zone 2 Leg Readings							
				Post-Compressor				Post-Receiver Tank					Leg Z2-L1		Leg Z2-L2		Leg Z2-L3		Leg Z2-L4	
	Amps	Operating Capacity	Indoor Temperature (TT-301)	Pressure (PT-101)	Flow (FT-101)	Temperature (TT-101)	Pressure (PT-102)	Pressure (PT-103)	Flow (FT-102)	Temperature (TT-102)	Relative Humidity (RHT-101)		Pressure (PI-203)	Flow (FT-203)	Pressure (PI-202)	Flow (FT-202)	Pressure (PI-204)	Flow (FT-204)	Pressure (PI-201)	Flow (FT-201)
		(%)	(°F)	(psi)	(scfm)	(°F)	(psi)	(psi)	(scfm)	(°F)	(%)		(psi)	(scfm)	(psi)	(scfm)	(psi)	(scfm)	(psi)	(scfm)
07/06/2017	NM	NM	89.8	103.7	559	103.7	103.3	56.4	441	97.9	65		33	135	32	127	33	142	32	138
07/13/2017	NM	NM	88.5	103.7	379	95.6	104.0	50.0	329	90.7	82		30	105	30	112	30	99	30	109
07/27/2017	55	57	80.5	104.0	385	86.2	103.9	44.9	305	85.5	79		30	97	30	95	30	108	30	100
08/03/2017	51	55	87.4	104.2	288	107.6	104.0	46.7	259	94.8	62		29	116	30	113	30	119	29	114

O&M Date	Zone 3 Air Compressor System Readings												Zone 3 Leg Readings					
				Post-Compressor				Post-Receiver Tank					Leg Z3-L1		Leg Z3-L2		Leg Z3-L3	
	Amps	Operating Capacity	Indoor Temperature (TT-301)	Pressure (PT-101)	Flow (FT-101)	Temperature (TT-101)	Pressure (PT-102)	Pressure (PT-103)	Flow (FT-102)	Temperature (TT-102)	Relative Humidity (RHT-101)		Pressure (PI-211)	Flow (FT-211)	Pressure (PI-209)	Flow (FT-209)	Pressure (PI-210)	Flow (FT-210)
		(%)	(°F)	(psi)	(scfm)	(°F)	(psi)	(psi)	(scfm)	(°F)	(%)		(psi)	(scfm)	(psi)	(scfm)	(psi)	(scfm)
07/06/2017	NM	NM	90.40	104.0	420	94.3	103.6	58.6	338	90.9	64		32	125	31	141	25	160
07/13/2017	NM	NM	88.70	103.7	328	93.5	104	51.1	300	86.9	97		29	120	31	106	40	126
07/27/2017	55	49	80.00	104.5	495	86.0	103.6	43.7	310	85.3	81		29	104	25	106	30	98
08/03/2017	51	70	89.00	104.3	262	98.0	104.1	48.1	239	95.8	64		40	89	31	95	25	112

O&M Date	Zone 4 Air Compressor System Readings												Zone 4 Leg Readings			
				Post-Compressor				Post-Receiver Tank					Leg Z4-L1		Leg Z4-L2	
	Amps	Operating Capacity	Indoor Temperature (TT-301)	Pressure (PT-101)	Flow (FT-101)	Temperature (TT-101)	Pressure (PT-102)	Pressure (PT-103)	Flow (FT-102)	Temperature (TT-102)	Relative Humidity (RHT-101)		Pressure (PI-212)	Flow (FT-212)	Pressure (PI-213)	Flow (FT-213)
		(%)	(°F)	(psi)	(scfm)	(°F)	(psi)	(psi)	(scfm)	(°F)	(%)		(psi)	(scfm)	(psi)	(scfm)
07/06/2017	NM	NM	82.0	104.0	289	105.8	104.0	62.5	241	91.6	63		22	105	24	203
07/13/2017	NM	NM	87.6	104.0	333	98.9	104.0	49.8	290	91.3	83		20	129	20	140
07/27/2017	50	57	81.5	103.8	500	86.1	103.8	43.8	325	86.1	89		29	100	25	101
08/03/2017	30	59	88.3	104.3	124	101.7	104.4	51.3	111	94.2	64		24	93	19	85

Notes:

1. kWh indicates kilowatt hours.
2. °F indicates degrees Fahrenheit.
3. % indicates percent.
4. psi indicates pounds per square inch.
5. scfm indicates standard cubic feet per minute.
6. NM indicates not measured.

Table 6-6. Zone 1: Air Sparge Well Pressure and Air Flow Measurements
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

O&M Date	Leg Z1-L1																					
	ASW0001		ASW0002		ASW0003		ASW0004		ASW0005		ASW0006		ASW0007		ASW0008		ASW0009		ASW0010		ASW0011		ASW0012	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	26	4	27	5	28	5	27	5	28	5	28	5	28	4	30	5	25	4	26	4	26	5	27	5
07/13/2017	25	4	26	4	27	4	26	4	27	4	27	4	27	5	28	5	25	5	25	3	25	4	26	4
07/27/2017	29	3	29	3	29	3	29	3	30	5	29	3	29	3	30	5	30	5	30	3	29	5	28	5
08/03/2017	28	5	27	4	30	3	28	5	28	3	29	3	28	4	28	5	29	3	24	3	27	5	27	4

O&M Date	Leg Z1-L1										Leg Z1-L2											
	ASW0013		ASW0014		ASW0015		ASW0016		ASW0017		ASW0018		ASW0019		ASW0020		ASW0021		ASW0022		ASW0023		ASW0024	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	27	3	30	4	29	4	25	4	25	4	27	4	27	4	28	4	25	4	27	3	27	5	27	4
07/13/2017	26	3	28	5	27	4	25	4	25	3	26	4	27	3	28	3	24	5	26	3	26	3	26	3
07/27/2017	27	3	28	3	30	5	28	5	28	3	29	7	27	5	28	3	28	3	27	3	28	5	27	5
08/03/2017	27	5	22	6	29	3	27	5	28	4	25	3	23	5	25	5	25	5	23	5	25	4	25	5

O&M Date	Leg Z1-L2																					
	ASW0025		ASW0026		ASW0027		ASW0028		ASW0029		ASW0030		ASW0031		ASW0032		ASW0033		ASW0034		ASW0035		ASW0036	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	27	4	27	4	28	3	27	4	25	4	27	4	27	5	26	5	25	4	25	4	25	5	25	4
07/13/2017	26	4	26	5	27	3	27	5	25	3	27	3	26	3	26	4	25	4	25	4	26	3	25	4
07/27/2017	28	5	29	3	30	2	28	5	30	3	30	3	29	3	29	5	30	5	29	5	29	3	29	3
08/03/2017	25	5	25	5	22	5	28	5	30	3	30	3	27	3	28	5	29	5	27	3	27	3	25	5

O&M Date	Leg Z1-L2								Leg Z1-L3													
	ASW0037		ASW0038		ASW0039		ASW0040		ASW0041		ASW0042		ASW0043		ASW0044		ASW0045		ASW0046		ASW0047		ASW0048	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	26	4	26	4	27	5	25	3	24	4	24	4	23	4	23	4	24	4	23	4	25	5	24	4
07/13/2017	26	3	26	3	27	4	26	3	23	3	24	3	24	3	23	3	24	4	23	4	25	2	24	3
07/27/2017	29	5	29	3	29	3	30	3	30	3	30	3	30	5	29	3	30	3	29	5	28	5	28	3
08/03/2017	27	5	28	5	28	3	25	3	33	4	25	5	27	5	29	3	28	3	28	5	28	5	28	5

O&M Date	Leg Z1-L3																					
	ASW0049		ASW0050		ASW0051		ASW0052		ASW0053		ASW0054		ASW0055		ASW0056		ASW0057		ASW0058		ASW0059		ASW0060	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	23	4	22	4	24	4	22	4	22	4	25	4	22	4	22	4	26	2	25	5	26	4	26	4
07/13/2017	23	3	22	3	24	3	22	3	22	3	25	2	22	3	22	4	26	2	25	4	25	2	26	3
07/27/2017	29	3	29	3	30	5	29	5	29	3	29	5	29	3	30	5	29	3	29	3	29	3	29	5
08/03/2017	30	3	29	3	24	5	29	5	28	5	29	3	30	3	30	3	28	5	29	5	28	3	30	3

O&M Date	Leg Z1-L3						Leg Z1-L4															
	ASW0061		ASW0062		ASW0063		ASW0180		ASW0181		ASW0182		ASW0183		ASW0184		ASW0185		ASW0186		ASW0187		ASW0188	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	25	5	25	4	26	3	27	6	26	6	26	6	27	6	26	6	28	6	27	6	27	5	26	6
07/13/2017	25	2	25	3	25	2	28	4	26	4	25	4	26	4	26	4	27	4	26	4	26	4	25	4
07/27/2017	28	3	28	3	28	3	27	5	28	3	30	3	30	3	28	3	28	5	27	5	29	3	30	3
08/03/2017	30	3	29	5	27	5	26	5	25	3	28	5	29	5	25	6	27	5	28	5	27	3	26	3

O&M Date	Leg Z1-L4											
	ASW0189		ASW0190		ASW0191		ASW0192		ASW0193		ASW0194		ASW0195	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	26	5	26	6	27	6	26	5	27	5	26	5	25	4
07/13/2017	26	4	26	4	26	4	26	4	26	4	26	4	25	3
07/27/2017	29	3	30	3	30	3	30	3	30	3	28	3	28	5
08/03/2017	28	3	29	3	30	3	27	5	28	3	28	3	30	3

Notes:

1. psi indicates pounds per square inch.
2. scfm indicates standard cubic feet per minute.
3. scfm calculated using the air distribution manifold temperatures presented on Table 6-4.

Table 6-7. Zone 2: Air Sparge Well Pressure and Air Flow Measurements
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

O&M Date	Leg Z2-L1																					
	ASW0064		ASW0065		ASW0066		ASW0067		ASW0068		ASW0069		ASW0070		ASW0071		ASW0072		ASW0073		ASW0074		ASW0075	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	28	5	26	4	28	4	28	5	28	4	28	5	28	5	28	4	28	4	28	5	28	5	28	5
07/13/2017	25	5	24	4	25	5	26	4	27	2	27	4	25	4	25	3	27	2	25	3	26	4	29	5
07/27/2017	28	3	29	5	29	5	28	3	27	5	26	5	29	5	29	3	29	3	27	5	27	3	29	5
08/03/2017	27	3	30	3	30	3	29	3	27	5	29	5	29	3	28	5	29	5	29	5	29	5	26	3

O&M Date	Leg Z2-L1																Leg Z2-L2					
	ASW0076		ASW0077		ASW0078		ASW0079		ASW0080		ASW0081		ASW0082		ASW0083		ASW0084		ASW0085		ASW0086		ASW0087	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	27	4	28	4	29	5	29	5	28	5	28	4	29	6	30	5	30	6	28	4	28	5	27	4
07/13/2017	27	3	27	4	29	5	29	6	29	5	27	5	29	6	30	4	30	5	27	2	27	4	26	4
07/27/2017	28	3	28	3	28	3	29	5	28	3	30	5	29	3	29	5	28	5	28	5	29	5	29	5
08/03/2017	29	3	29	3	28	5	25	5	29	3	27	5	27	5	27	5	29	3	27	3	27	5	27	5

O&M Date	Leg Z2-L2																					
	ASW0088		ASW0089		ASW0090		ASW0091		ASW0092		ASW0093		ASW0094		ASW0095		ASW0096		ASW0097		ASW0098		ASW0099	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	29	3	29	6	28	4	28	4	27	4	29	3	28	6	28	3	28	4	28	4	28	5	27	4
07/13/2017	27	2	28	4	26	4	27	3	26	3	28	2	26	2	27	2	27	2	27	3	27	3	26	3
07/27/2017	30	5	29	7	29	5	29	3	29	3	29	5	29	5	30	5	30	3	29	3	30	5	29	5
08/03/2017	29	5	27	5	27	5	28	5	29	5	29	3	28	3	28	5	29	5	28	5	29	5	29	5

O&M Date	Leg Z2-L2										Leg Z2-L3													
	ASW0100		ASW0101		ASW0102		ASW0103		ASW0104		ASW0105		ASW0106		ASW0107		ASW0108		ASW0109		ASW0110		ASW0111	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	28	3	28	4	29	4	28	5	28	4	26	4	28	5	29	5	28	4	29	6	29	5	29	7
07/13/2017	26	3	27	4	28	3	26	4	27	3	25	3	26	5	26	5	26	4	29	5	26	3	28	4
07/27/2017	28	5	27	3	29	5	30	3	30	3	29	5	29	3	29	5	30	3	29	3	30	5	30	5
08/03/2017	29	3	30	3	29	3	29	5	28	5	28	5	28	5	29	3	28	5	28	5	28	5	29	3

O&M Date	Leg Z2-L3																					
	ASW0112		ASW0113		ASW0114		ASW0115		ASW0116		ASW0117		ASW0118		ASW0119		ASW0120		ASW0121		ASW0122		ASW0123	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	29	6	28	6	28	5	29	6	29	4	28	3	29	4	29	3	29	4	30	3	28	4	30	4
07/13/2017	28	4	27	4	26	4	28	5	28	3	26	5	27	3	28	3	28	3	28	3	26	4	29	3
07/27/2017	29	3	29	3	28	3	28	3	27	3	26	3	26	5	30	5	29	5	30	3	30	3	29	3
08/03/2017	27	5	30	5	28	3	29	3	28	3	27	3	29	5	28	3	29	3	30	5	28	3	30	3

O&M Date	Leg Z2-L3										Leg Z2-L4													
	ASW0124		ASW0125		ASW0126		ASW0127		ASW0128		ASW0129		ASW0130		ASW0131		ASW0132		ASW0133		ASW0134		ASW0135	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	28	3	30	3	28	3	28	4	28	4	28	4	29	6	28	5	28	4	28	4	28	5	28	5
07/13/2017	27	2	28	3	26	3	27	3	27	3	28	3	29	3	28	3	29	3	29	3	28	3	28	3
07/27/2017	26	5	28	5	28	5	28	5	28	3	29	3	30	3	30	3	30	3	29	3	29	3	30	5
08/03/2017	29	5	28	5	30	5	29	5	29	3	27	5	29	5	29	5	29	3	29	3	29	3	29	3

Table 6-7. Zone 2: Air Sparge Well Pressure and Air Flow Measurements
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

O&M Date	Leg Z2-L4																							
	ASW0136		ASW0137		ASW0138		ASW0139		ASW0140		ASW0141		ASW0142		ASW0143		ASW0144		ASW0145		ASW0146		ASW0147	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	28	6	28	5	28	6	28	6	28	4	28	5	28	6	28	5	28	5	28	3	28	5	28	5
07/13/2017	29	3	28	3	29	4	27	5	29	3	29	3	29	3	29	3	28	3	28	3	28	3	29	3
07/27/2017	30	3	30	3	30	3	29	3	29	3	28	3	29	3	30	3	29	3	29	3	29	3	30	5
08/03/2017	28	5	28	5	29	3	30	5	29	3	29	3	29	3	29	3	28	5	28	3	30	3	30	5

O&M Date	Leg Z2-L4	
	ASW0148	
	Pressure (psi)	Flow (scfm)
07/06/2017	28	5
07/13/2017	29	3
07/27/2017	30	3
08/03/2017	29	5

Notes:

1. psi indicates pounds per square inch.
2. scfm indicates standard cubic feet per minute.
3. scfm calculated using the air distribution manifold temperatures presented on Table 6-4.

Table 6-8. Zone 3: Air Sparge Well Pressure and Air Flow Measurements
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

O&M Date	Leg Z3-L1																					
	ASW0149		ASW0150		ASW0151		ASW0152		ASW0153		ASW0154		ASW0155		ASW0156		ASW0157		ASW0158		ASW0159		ASW0160	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	26	6	25	5	26	6	26	6	26	5	24	6	25	6	26	6	27	6	26	6	26	6	26	6
07/13/2017	28	6	28	6	30	6	28	5	29	4	28	5	28	6	30	6	29	6	29	6	30	6	27	6
07/27/2017	30	3	30	3	29	3	29	3	29	5	29	5	30	3	30	3	30	3	29	3	28	3	30	5
08/03/2017	27	5	28	5	28	5	28	5	28	5	29	5	30	3	25	3	29	3	28	5	27	5	29	3

O&M Date	Leg Z3-L1						Leg Z3-L2															
	ASW0161		ASW0162		ASW0163		ASW0164		ASW0165		ASW0166		ASW0167		ASW0168		ASW0169		ASW0170		ASW0171		ASW0172	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	27	5	25	6	26	5	27	5	28	5	28	5	27	5	28	5	29	3	27	4	26	4	26	5
07/13/2017	29	7	27	6	29	5	29	3	30	3	30	3	29	4	29	6	30	3	29	3	28	4	28	4
07/27/2017	29	3	29	3	30	3	30	3	28	5	28	3	29	3	30	3	27	5	26	5	27	5	29	5
08/03/2017	29	3	28	3	24	5	30	5	29	3	28	3	29	3	29	3	30	3	29	3	29	3	28	3

O&M Date	Leg Z3-L2																					
	ASW0173		ASW0174		ASW0175		ASW0176		ASW0177		ASW0178		ASW0179		ASW0196		ASW0197		ASW0198		ASW0199		ASW0200	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	28	6	28	6	28	5	27	5	29	4	28	3	24	4	26	5	27	5	26	4	27	6	25	4
07/13/2017	29	3	29	3	29	3	30	3	30	3	29	4	25	4	28	4	29	4	28	3	30	3	27	3
07/27/2017	28	3	30	3	30	3	30	3	28	5	29	3	28	3	27	5	29	3	28	3	30	5	30	3
08/03/2017	29	3	30	5	30	5	29	5	28	5	29	5	28	5	29	3	29	3	30	5	29	3	29	5

O&M Date	Leg Z3-L2		Leg Z3-L3																			
	ASW0201		ASW0202		ASW0203		ASW0204		ASW0205		ASW0206		ASW0207		ASW0208		ASW0209		ASW0210		ASW0211		ASW0212	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	26	5	17	4	23	4	22	3	23	3	23	4	23	4	23	3	24	2	22	3	22	2	22	3
07/13/2017	27	5	19	2	29	3	23	2	23	3	24	3	24	3	23	2	29	3	23	2	25	2	23	2
07/27/2017	28	5	29	3	30	3	30	3	28	3	30	3	29	3	27	5	26	5	27	3	28	3	30	3
08/03/2017	30	5	30	5	18	3	28	5	28	5	28	3	30	3	29	5	30	5	29	3	28	5	30	3

O&M Date	Leg Z3-L3																					
	ASW0213		ASW0214		ASW0215		ASW0216		ASW0217		ASW0218		ASW0219		ASW0220		ASW0221		ASW0222		ASW0223		ASW0224	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	23	5	23	2	23	4	23	3	23	2	23	2	24	4	23	2	22	5	23	3	23	4	22	5
07/13/2017	24	3	24	2	23	3	23	2	24	2	23	2	24	3	24	2	23	5	24	2	24	3	20	7
07/27/2017	26	5	25	5	28	3	29	3	28	3	28	3	29	3	30	3	30	3	30	3	30	3	29	3
08/03/2017	30	5	18	3	19	4	26	3	19	4	29	3	29	3	30	3	29	5	30	5	20	5	28	5

O&M Date	Leg Z3-L3															
	ASW0225		ASW0226		ASW0227		ASW0228		ASW0229		ASW0230		ASW0231		ASW0232		ASW0233	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	23	3	24	5	24	2	22	5	23	4	23	5	23	5	22	4	23	5
07/13/2017	24	2	25	3	25	2	25	6	24	4	24	2	24	3	23	5	24	3
07/27/2017	28	5	27	3	28	3	28	5	30	3	30	3	30	3	30	3	28	3
08/03/2017	28	5	30	5	30	3	30	5	29	5	28	5	29	3	29	5	19	4

Notes:

1. psi indicates pounds per square inch.
2. scfm indicates standard cubic feet per minute.
3. scfm calculated using the air distribution manifold temperatures presented on Table 6-4.

Table 6-9. Zone 4: Air Sparge Well Pressure and Air Flow Measurements
Air Sparge Construction Completion Report
Launch Complex 39B, SWMU 009

O&M Date	Leg Z4-L1																					
	ASW0234		ASW0235		ASW0236		ASW0237		ASW0238		ASW0239		ASW0240		ASW0241		ASW0242		ASW0243		ASW0244		ASW0245	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	11	5	14	5	11	5	12	5	13	5	20	5	20	5	16	5	14	5	15	5	15	5	15	5
07/13/2017	11	4	15	4	11	4	12	5	13	5	18	7	18	5	15	5	14	5	15	5	14	3	14	5
07/27/2017	30	3	30	3	30	3	29	3	27	5	28	3	30	3	30	5	30	5	28	3	28	3	30	3
08/03/2017	18	4	18	3	18	3	19	3	19	4	17	3	20	3	17	3	19	3	18	4	20	3	18	2

O&M Date	Leg Z4-L1		Leg Z4-L2																			
	ASW0246		ASW0247		ASW0248		ASW0249		ASW0250		ASW0251		ASW0252		ASW0253		ASW0254		ASW0255		ASW0256		ASW0257	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	14	5	20	5	20	5	20	5	20	5	20	5	20	5	22	5	22	5	22	5	21	5	21	4
07/13/2017	14	5	18	7	19	3	19	4	19	3	19	4	18	4	20	5	19	6	19	6	19	4	19	4
07/27/2017	29	3	30	3	27	5	27	5	27	3	27	5	30	3	28	3	28	3	30	3	30	3	29	3
08/03/2017	18	3	30	5	18	4	19	4	19	3	15	3	20	5	19	3	19	4	19	4	17	4	17	4

O&M Date	Leg Z4-L2																					
	ASW0258		ASW0259		ASW0260		ASW0261		ASW0262		ASW0263		ASW0264		ASW0265		ASW0266		ASW0267		ASW0268		ASW0269	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	22	3	22	5	21	5	21	5	21	5	21	5	22	2	22	5	22	4	21	4	21	3	21	5
07/13/2017	19	4	19	7	19	4	19	5	19	6	19	5	19	4	20	7	19	6	19	5	19	4	19	3
07/27/2017	29	3	25	5	26	3	26	5	27	5	29	3	29	3	30	3	30	3	28	3	28	3	30	3
08/03/2017	20	5	20	2	18	4	21	8	19	4	19	7	15	4	18	4	20	5	19	3	17	4	18	4

O&M Date	Leg Z4-L2																			
	ASW0270		ASW0271		ASW0272		ASW0273		ASW0274		ASW0275		ASW0276		ASW0277		ASW0278		ASW0279	
	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)	Pressure (psi)	Flow (scfm)
07/06/2017	20	5	21	5	20	5	22	5	20	5	22	5	20	5	22	4	19	5	21	5
07/13/2017	20	5	19	5	17	7	19	6	18	4	19	5	18	4	19	4	19	4	19	6
07/27/2017	30	3	29	3	28	3	27	3	27	5	27	5	27	7	27	3	27	5	27	5
08/03/2017	18	3	19	4	18	3	19	3	20	2	19	3	21	3	19	3	18	4	18	4

Notes:

1. psi indicates pounds per square inch.
2. scfm indicates standard cubic feet per minute.
3. scfm calculated using the air distribution manifold temperatures presented on Table 6-4.

SECTION VII

SUMMARY AND RECOMMENDATIONS

Based on the information presented above, the air sparge system is operating as designed and no modifications are recommended at this time. As described in the Air Sparge IWP [NASA 2017a], it is recommended to continue weekly telemetric monitoring, monthly O&M activities, and performance monitoring as outlined in Table 3-2. The monthly O&M activities will include semi-annual preventative maintenance appointments with an Atlas Copco technician.

SECTION VIII

REFERENCES

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APPENDIX A
MEETING MINUTES

DRAFT Revision 1 Meeting Minutes for October 18, 2017
Attendees:

John Armstrong/FDEP – phone/web
Laura Barrett/FDEP – phone/web
Rachel Roberson/FDEP Intern - phone/web
Glenn Semmel/NASA
Anne Chrest/NASA
Dinh Vo/NASA
Mike Deliz/NASA
Harry Plaza/NASA
Ryan O'Meara/NASA
Michelle Moore/KEMCOM
Deda Johansen/Jacobs
Chris Adkinson/Jacobs
Guy Fazzio/Jacobs
Harlan Faircloth/Core
Tom Peel/Geosyntec
Eric Sager/Geosyntec
Melissa Hensley/Geosyntec
Amy DeSantis/Geosyntec
Rebecca Daprato/Geosyntec
Kevin Warner/Geosyntec
Mark Speranza/Tetra Tech
Mark Jonnet/Tetra Tech
Debbie Wilson/Tetra Tech
Alex Murphy/Tetra Tech
Chris Pike/Tetra Tech

1710-M05 Rebecca Daprato/ Geosyntec

Launch Complex 39B (SWMU 009)

Goal: Present Air Sparge Construction Completion Report.

Discussion: 31 performance monitoring wells were installed in November 2016. Baseline sampling of 37 wells for chlorinated VOCs (CVOC) was conducted in November/December 2016. The results generally confirmed the supplemental direct push technology (DPT) sampling results.

Six soil borings collected in November 2016 to further refine site lithology and to investigate lithology that was previously identified as potentially low-permeability soil (focused on 40 to 65 ft BLS). This sampling identified sandy clay layers and seams from 56 to 60 ft BLS at various locations. The lithology above these layers was identified as a good candidate for sparging. Based upon visual observations of these samples, no geotechnical samples were collected.

The Implementation Work Plan (IWP) was submitted in January 2017. The IWP treatment area is the CVOC HCP (same as the IM Work Plan). The IWP removed the 12 proposed angle drilled wells underneath the ventilation tunnel to avoid sparging directly under the ventilation tunnel. Therefore, a total of 279 air sparge wells were installed. Direction drilling was not included in the IWP as the Pad Leader approved trenching and repaving of roads/parking lots. Galvanized piping was used above ventilation tunnel. A majority of the air sparge wells were completed without manholes. A 100-

horsepower compressor system was procured. Air sampling was conducted at baseline and during month 1 of operations.

Air sparge well installation conducted from January to February 2017 and completed February to April 2017. Infrastructure installation was conducted from January to June 2017 (trenching, piping, manifolds, air sparge well connections). The air sparge trailer was delivered and installed in June 2017. System startup/commissioning period was 26 June through 21 July 2017. System checkout and addressing areas where groundwater surfaced was completed during this period. System operation 30 June to 14 July 2017 and 24 July to current. System was shut down part of July to address groundwater surfacing.

LC39B Pad personnel were informed of activities as much as possible. NASA Remediation Project Manager attended daily LC39B Pad meetings to keep them informed.

A soil boring was collected at the final 5 to 10 ft of each borehole prior to air sparge well installation. The screen interval for each air sparge well was adjusted based on findings of these borings to avoid installaing the air sparge well screen in the low permeability layers.

Depending on location of air sparge wells some were completed with a manhole and others were direct buried (included a magnetic marker).

Piping that provides air to air sparge wells south of the ventilation tunnel transitioned from 4-inch HDPE on the north side of the ventilation tunnel to 2-inch HDPE on the south side, using 2-inch galvanized pipe.

Air samples 1, 2, and 3 were collected outdoors and 4 and 5 were collected in the ventilation tunnel. Prior to system startup AERSCREEN was utilized to estimate concentrations of TCE, cDCE, and VC at the air sampling locations. AERSCREEN results indicated that the concentration of VC in the Hot Spot 2 area could be close to Occupational Exposure Limit (OEL). Based on this result the system operation was modified so that the zone associated with Hot Spot 2 operated at night (when facility is not occupied). Air sampling results (collected weekly during first four weeks of operation) indicated that concentrations were below the OEL.

System was turned off to address groundwater surfacing that developed after startup. "Blow outs" where preferential pathways resulted in groundwater reaching ground surface were dug out by hand, portland cement was placed in location, and air flow was tempered. Monitoring wells with caps not on tight resulted in preferential pathways as well; well caps were tightened.

Survey of ventilation tunnel in air sparge area completed before and during weekly O&Ms. Pre-IM conditions were documented and will be compared to post-IM conditions. No adverse effects of air sparge system operation were observed in the ventilation tunnel during Month 1. Ponding of water in ventilation tunnels was identified prior to air sparging. Samples were collected at 5 locations and TCE, cDCE, and VC were below detection limits in all samples collected.

Deviations from IWP:

- Piping was altered in the field to reduce LOX line crossings, reduce time for road closures, and to increase ease of installation.
- Air sparge well depths adjusted based on depth of low permeability layer observed in each boring. 38 air sparge well screen intervals changed by greater than 1 ft (average change approximately 1.6 ft).
- Some air sparge well locations shifted due to utilities or site features.
- Zone 1B and 3 leg piping changed from 4-inch to 2-inch south of ventilation tunnel to reduce the number of welds needed.
- Marking poles removed for air sparge wells outside of Pad fence; relying on magnets for locating direct buried air sparge wells.

Lessons Learned:
Collect soil core around proposed air sparge well screen interval depth:

- Allows for confirmation of lithology;
- Physically removes material around screen interval; and
- Screen interval can be adjusted if low permeability layer is present.

Pro-actively confirm target air flow can be achieved with portable air compressor.

- Conducted tests at select air sparge wells during first weeks of installation.
- Focused on air sparge wells where screen intervals were altered above the lithology that suggested air flow might be reduced.

NASA mentioned that the team is planning to change construction completion report contents and advance data packages in the future. They are going to expect as-builts, lessons learned, and first quarterly monitoring. More to come on this.

APPENDIX B
FIELD FORMS
(FURNISHED ON CD)

NOVEMBER 2016
MONITORING WELL INSTALLATION

FIELD FORMS

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: 39B NASA
Project No.: FR1352E/07
Contractors: GPI

Date: 11/14/16
Task No.: 07

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

0900 Arrived Onsite, conducted TSA
1000 Inside launch pad, began setup
1030 Began work at MW0010 (MW-M)
1045 Difficult drilling at 15 ft BLS at MW-M
1115 Finished drilling of MW0010
1155 Began development
1215 Finished development
1230 Lunch – Drillers left for lunch
1300 left for lunch
1335 Returned for lunch
1410 Began Drilling MW-N (MW 0011)
1510 MW Drilling taking a long time due to hard layers
1540 Began well development (MW0011)
1600 Finished well development (MW011), grouted well.
1700 left Site

Plans/Future Activities

MW Install

Signature/Date 11/14/16

Geosyntec consultants

DAILY FIELD REPORT

Project: 39B
Project No.: ~~FR1357.07~~ NWG FR1352E
Contractors: GPI
Date: 11/15/16
Task No.: 07

Work Performed

Well Installation: X
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0700 Arrived on site conducted safety meeting
0710 GPI arrived on site
0715 Calibrated YSI
0730 began drilling MW 0 (MW 0012) 50 ft BLS
0730 Using augers for first 20 ft to increase drill speed
0800 Augers didn't help. Slow drilling at 20 ft BLS
0820 Reached depth of 50 ft BLS
0930 Finished MW0012 development
1005 Began MW0013 (MW-L)
1015 Using flight augers to 25 ft BLS after convo w/ Mike due to hard layer
1045 Reached 26 ft BLS using DPT
1125 Finished MW0013 water never cleared up during development. Stopped pumping after asking Jim L. what to do. Grouted after development
1135 Broke for lunch.
1230 Returned from lunch, beginning MW K (16-26, MW0014)
1250 Grey sand 5-10 ft BLS, Black wet soil at 10 ft BLS w/ shell
Wet dark brown soil at ~20 ft BLS
1315 Reached depth, Set MW (26 ft BLS)

Plans/Future Activities

MW install -

11/15/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 2 (WW6 2)

Project: LC39B
Project No.: ~~FR1357/07-WW6~~ FR1352E
Contractors: GPI
Date: 11/15/16
Task No.: 07

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

1340 Finished developing MW0014. Pumped 15 gal and did not ever begin to clear up.
1350 Finished MW0014.
1410 Began MW0015 (MW-K 26-36 ft BLS) used auger to 25 ft BLS then switched to DPT.
1450 Reached depth, driller overdrilled 0.4' ft.
1526 Finished MW0015 development. Crystal clear after 20 gal
1530 Began well completions.
1600 Wiped down IDW drums
1605 Decided to finish 14/15 tomorrow because driller doesn't have room. Drillers to arrive at 6 a.m. tomorrow
1700 left Site

Plans/Future Activities

MW install

11/15/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B
Project No.: FR13526
Contractors: GPI (Brian N., Gamalier R.)

Date: 11/16/16
Task No.:

Work Performed

Well Installation:
Soil Borings: X ASW015
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600: J. Bartlett (JB) ~~at~~ office. Load vehicle. Travel to site.
0645: JB onsite. Receive overlay badge. Meet GPI onsite. Conduct tailgate safety meeting and check-in w/ R. Dipaolo (RD – Geosyntec PM).
0700: GPI begin grouting borehole at ASW066.
0720: JB calibrate MiniRAE 3000 PID → Zero cal: 0.0 ppm. ✓
Span cal (100 ppm isobut.): 100.0 ppm. ✓
0735: GPI completed grouting ASW066. Clean area, containerize IDW, mob to SB1680 (ASW050)
0820: Setup at SB1680 (ASW050) ~~Begin drilling~~ (JB) Hand auger to 5 ft BGS to check for utilities. Begin drilling. For details, refer to Boring Logs.
1005: Borehole at SB1680 complete. Begin grouting borehole.
1040: Grouting complete. Mob to SB1681 (DPT0617). Hand auger to 5 ft BGS to check for utilities prior to drilling. Begin drilling. For details, refer to Boring Logs.
1205: Complete soil boring at SB1681. Grout, clean area.
1230-1330: Lunch (GPI retrieve more water)
1330: Mob to MW-G → 39B-MW0021, 39B-MW0022, 39B-MW0023
Decon tooling, containerize IDW, retrieve extra drums from GPI employee outside of pool gate.
1430: Hydraulic line of other drill crew broken – rig down JB offsite, Will Grande to oversee both crews – 1 crew continue installing wells.

~~Plans/Future Activities~~ (JB)

1 crew begin well pad completions while awaiting rig mechanic.

11/16/16
Signature/Date

Geosyntec consultants WG

DAILY FIELD REPORT

Page 1 of 2

Project: ~~FR1357 39B~~ FR1352E
Project No.: ~~FR1357 WG~~
Contractors: GPE

Date: 11/16/17
Task No.:

Work Performed

Well Installation: X
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600 Arrived on-site
0615 ~~Conduct~~ Conducted Safety meeting.
0645 Began drilling MW-J (MW0016)
0710 Hit hard layer at 3 ft BLS, stepped out 4 ft from above ground utilities. Talked to Mike.
0715 Began new borehole. MW J (MW0016)
0810 Finished MW development. Pumped 17.5 gal, Tur = 288
0940 Finished MW0016, Driller out of Soil IDW drums, more on the way
0945 Began drilling MW0017 (MW J, 30-40)
0930 Learned No Dig Day on Friday, talked to mike, finishing as many holes as possible, not developing today or doing completions. Grouting MW0017.
0950 Drillers out of water, left to refill
1025 Drillers returned w/ water, began decon.
1035 Began drilling MW0018 (MW I, ~~30~~ 20-30)
~~1115~~ 1115 Set MW0018, began grouting
1130 Finished grouting MW0018, began Decon
1140 Drillers went to lunch
1240 Driller began MW0019 (MW I, 30-40)

Plans/Future Activities

MW install

Signature/Date 11/16/17

Geosyntec consultants

DAILY FIELD REPORT

Page 2 of 2

Project: LC39B
Project No.: ~~FR1357~~ W6 FR1352E
Contractors: GPI

Date: 11/16/16
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

1345 Grating MW0019
1430 Droms for Soil arrived on-site. (3 droms)
1435 Began drilling MW0020, trying DPT initially
1445 Hydraulic line broke, moved on to pads, line fixed by tomorrow
1445 Second rig began MW002~~5~~3 (50 ft BLS, MW 6)
1515 Slow drilling 40-50 ft BLS
— Driller fills each casing w/ water as they are attached
1520 Driller reached depth, set well.
1545 ~~Last Per~~ W6
1605 Finished MW0014 ; 15 pad
1610 Hydraulic Repair Arrived on Site
1650 left site, closed up ± DW, (Threw away decon plastic.

Drillers

Line sprayed fluid on rig and rods. Both were deconed w/ decon fluid and wiped down. Moved onto finishing well pads.

Plans/Future Activities

MW Instan

11/16/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: FR135F LC3/5
Project No.: ~~FR135F~~ WG FR135E
Contractors: GPI

Date: 11/7/16
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

0645 Arrived on site, held safety meeting
0810 Began drilling MW0026 (MW-44, 40-50)
0720 Slow drilling at 10 ft BLS
0730 Switching to flight Augers for 0-20 ft BLS. DPT hardly moving ent 10 ft BLS.
0816 Slow drilling at 40 ft BLS
0825 Reached 50 ft BLS, Set well.
0830 Driller informed me that borehole filled in w/ sand. Need to redrill MW0020. Flight auger again to 15 ft BLS.
0840 Began redrilling MW0020
0920 Talked to pad leader about opening security gate to decrease mob time to outside gate wells, possible but 24 hr notice preferred.
0935 Reached depth for new MW0020 borehole, set well.
1015 Finished MW0020 w/ grout, decon-ing
1035 Began MW0026, wanted to use DPT only, driller (Paul) said waste of time - using flight auger to 15 ft BLS then DPT to 40.
1110 Reached depth for MW0026, set well

Plans/Future Activities

11/7/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC2AB
Project No.: ~~FR1357-W6~~ FR1352E
Contractors: GPI

Date: 11/17/16
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

1130 Finished MW0026, deconing. Driller upset about having to decon flight auger since next hole is a foot away.
1145 Broke for lunch
1245 Returned from lunch, began drilling MW0027. Using auger to 15 ft BLS.
1415 Reached 50 ft BLS
1450 Finished MW0027
1500 9 pads for tomorrow! 16 wells to develop
1530 Drilling MW0031 (mw-U, 10-15) DPT only, slow but working.
1550 Reached depth. Set well.
~~1565~~1625 Drilling MW0032 (mw-P), used auger from 0 to 10 ft BLS then switched to DPT for 10-15 ft BLS.
1635 Reached depth, set well.
1700 Left Site
1715 Conducted IDW QC at MLP per Burcham's request.

Plans/Future Activities

MW completions/development

11/17/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B
Project No.: FR13525
Contractors: GPI (B. Hazlworth, G. Rivera)

Date: 11/17/16
Task No.: 07

Work Performed

Well Installation: X
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600: J. Bartlett at office. Load vehicle, travel to site.
0630: JB onsite w/ GPI. Retrieve overlay badges and mobs to site.
~~0655~~ tailgate safety meeting. Discuss today's scope of work with Will Berdle and second crew.
0700: Begin drilling at MW-G → MW0022 (30-40 ft BGS). For details, refer to Well Construction Log.
0745: Complete installation of MW0022. Decon tooling.
0810: Mob to MW-G → MW0021 (20-30 ft BGS). Hand auger to 5 ft BGS to check for utilities prior to drilling. For details, refer to Well Construction Log.
0850: Complete installation of MW0021 ~~(2013)~~. Dig out pad area. Decon tooling.
0915: Mob to MW-F → MW0024 (30-40 ft BGS), MW0025 (40-50 ft BGS). Hand auger to 5 ft BGS to check for utilities. Begin installing MW0025.
1035: Complete installation of MW0025. Decon tooling.
1100: Mob to MW0024 (30-40 ft BGS). Hand auger to 5 ft BGS to check for utilities. Begin installing MW0024. For details, refer to Well Construction Log.
1145: Complete installation of MW0024. ~~Decon tooling~~ (JB) Clean area, set tooling up for decon. — need more water.
1215 - 1315: Lunch. GPI get water. JB discuss options to open crash gate for installation of MW's outside of pad perimeter.
→ TOSC Security 321-289-8129 (Malik)

~~Plans/Future Activities~~ (JB)

→ TOSC contacted JB informing that Geosyntec will NOT be able to use the crash gate.

11/17/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LL39B
Project No.: ~~FR13528~~
Contractors: GPI (B. Nazworth, S. Rivera)

Date: 11/17/16
Task No.: 07

Work Performed

Well Installation: X
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0815: Recon tooling. Mob rig to MW-D → 39B-MW0028. Hand auger to 5 ft BLS to check for utilities. Begin drilling. For details, refer to Well Construction Log.

1440: Complete installation of MW0028. Clean area. Dig up pad area. Decon tooling

1510: Mob to MW-C → 39B-MW0029 (30-40 ft BLS), ~~MW0030~~ 39B-MW0030 (40-50 ft BLS) Set up @ MW0030. Hand auger to 5 ft BLS to check for utilities. Begin drilling of MW0030. For details, refer to Well Construction Log.

1610: Complete installation of MW0030. Clean area. dig up area around well for pad. Decon tooling. Dig out pad area of remaining monitoring well locations. Clean IDW area and drums

1700: offsite.

Plans/Future Activities

11/17/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B
Project No.: FR1352E
Contractors: GPL

Date: 11-18-16
Task No.:

Work Performed

Well Installation: X development + pads
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 0645- Arrive @ LC39B (site). Check in @ Pad Leader office. Go over plan for the day w/ Will Garde (Geosyntec). Calibrate instruments Will Garde begins well developments and Ben Coppenger begins marking GPR points, site cleanup, etc.
- 0900- Ben Coppenger begins well developments. See well development logs for more info
- 1145- Finished well development for the day. Will Garde performs IDW mgmt and Ben Coppenger measures newly installed wells from existing nearby points.

MW-M(10) from FCS-22 = 28.6
MW-17 " = 31.5
MW-16 " = 32.5
MW-15 " = 98.0
MW-14 " = 98.5
MW-13 " = 119.0
MW-11 " = 99.0
MW-12 = 184.0

MW-19" = 116
MW-18" = 115
MW-20 = 243

Plans/Future Activities

- 1230 - Begin GPSing GPR locations
- 1430 - Finished and off site. Check out @ Pad Leader office.

11-18-16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B
Project No.: FR1352
Contractors: GPI
Date: 11/18/16
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: Well Pads/completions MW development

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0645 Arrived On site.

Wells to be developed: 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, ~~29~~ W6, 30, 31, 32

Wells with 24 hrs of grout curing:
at 0600: 17✓, 18✓, 19✓, 21✓, 23✓
0900: 22✓, ~~24~~, ~~26~~, ~~29~~, 21✓
1200: 20, 26, 25, 24
1500: 27, 28
1700: 31, 32, 29, 30 – Not developed today

22 = 745✓ 24 = 1145✓
21 = 850✓ 20 = 1015✓
25 = 1035✓ 26 = 1130

0605 Began developing MW0018, 5 gal introduced, 12.5 purged out.
0620 Finished developing MW18
0846 Began MW0019 develop, 12.5 gal added
0855 Finish MW0019 development, removed 15 gal
0905 Began MW0017 development, 10 gal added during construction
0920 Finished MW0017 development, removed 15 gal
0605 Began MW0020 development, 20 gal added
1030 Finished MW0020 development, pumped out 20 gal
1100 went back to completed wells (18, 19, 20) to get DTW and Total Depth measurments for development forms.

Plans/Future Activities

11/18/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B
Project No.: FR1352
Contractors: GPI

Date: 11/18/16
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: X MW development

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

→ Driller left site.
1145 Wiped down all IDW drums
1215 Closed up and strapped down all IDW pallets
1145

Plans/Future Activities

11/18/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC343
Project No.: ~~FXR05~~ FR1352E
Contractors: GPI (Brian + Graham); GeoView

Date: 11/21/16
Task No.: 07

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:	GPR Survey	Sampling Drums:	

Observations/Issues of Concern

0645 - Arrive @ TVL office. Load supplies.
0715 - Arrive @ badging station to meet GPR crew (GeoView)
0730 - GeoView's badge request not in system. Contact Rebecca Dupuis (RD) to get badge submitted. Calibrate well development equipment while waiting @ badging station
0830 - Finish YSI cal. Informed that Harry Placa has submitted badge request
0915 - Sign in @ Pad + mob to site
0930 - Conduct H&S meeting w/ GPI + GeoView. GeoView will do GPR while I oversee MW install
0945 - Set up @ MWC-30-40 (MW0029). Hand auger to 5 FT BLS. Begin drilling. Fill rods w/ water during drilling to assist Drillers cleaning rods w/ rags as they are being pulled out
1040 - Complet MW0029. Grouted + will develop >24 hrs due to schedule. Moving to MWA-36-46 (MW0033)
1100 - Set up @ MWA-36-46 (MW0033). Hand auger to 5 Ft BLS
1155 - Well set, screen installed. Begin MW development.

Plans/Future Activities

1235 - Finish MW0033. Mob to ~~lot~~ MA location B, but it has not been cleared. Call Jeff McDowell, he will do it tomorrow.
1250 - Break for lunch after mobing to MW-Q. Need to get IDW labels + bar codes from Logistics building
1345 - Back on site. Table Down + Spill Pallet. Mob to ~~MW~~ MW-Q

* See MW const. logs + development logs for relevant details

11/21/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B
Project No.: FR1352E
Contractors: GPI (Brian + Gene); GeoView

Date: 11/21/16
Task No.: 07

Work Performed

Well Installation: X
Soil Borings:
DPT:
Well Inventory:
Other: GPR

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1410 - Clear to 5 ft BLS MW-Q-18-28 (MW0035) + begin drilling. Jeff McDowell calls to confirm location of MW3 for clearance
1440 - Dave Sizemore on site. Discuss work for tomorrow
1445 - Well/seal installed begin MW0035 development
1505 - Drillers deal w/ IDW. Get form for MW pad
1525 - Drillers return. Begin grouting MW0035
1535 - Set up @ MW-Q-18-18 (MW0034). Complete MW0035
1540 - Gene spots what appears to be a pygmy rattlesnake by the GPI truck. Discuss safety + situational awareness w/ drillers
Begin drilling @ MW0034
1610 - GeoView off site. Reached stopping point
1613 - Begin developing MW0034. Drillers manage IDW + dig out well pads that haven't been
1645 - Finish MW0034. Mob to dispose of IDW + check out
1700 - Checked out + heading off site

Plans/Future Activities

11/21/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 2

Project: LC39B
Project No.: FR1352 R
Contractors: GPI

Date: 11/22/16
Task No.: 07

Work Performed

Well Installation: ✓ mw36, 37, 38, 39
Soil Borings:
DPT:
Well Inventory:
Other: well Development,

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 Dms Arrives Pad ops. Drillers arrive, Geoview Arrives. Sign in
6:40 Dms Conducts tailgate meeting. Geoview Sets up & Begins GPR Activities, Drillers set up.
7:30 Drillers Begin Hand Augering MW-T (mw-36).
8:03 mw-36 Installed, Dms develops well. Drillers Construct pad for mw 29 & 30.
8:32 Dms Done developing mw0036. Driller Grout ~~mw0036~~ mw0036.
8:45 Grouting Complete, Decon & move to MW-8 (mw-37/ mw38).
953 Drilling, Set & Seal Complete. Develop well (mw37) Drillers Construct pad for mw0033.
10:25 Drillers Grout mw37, Hand Auger mw38.
11:33 Drilling, set & seal Complete on mw38.
11:55 Begin Developing mw38. Drillers Break for Lunch.
12:13 Developing mw38 Complete. Dms Breaks for Lunch.
13:00 All personnel Return from Lunch - Driller Grout mw0038.

Plans/Future Activities

11/22/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: 358
Project No.: FR13SLE
Contractors: GPI

Date: 11/22/16
Task No.: 07

Work Performed

Well Installation: mw 36, 37, 38, 39
Soil Borings:
DPT:
Well Inventory:
Other: well Development

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

13:20 Grouting mw0038 Complete, Begin Constructing pad for ~~Transfer~~ mw0037 & mw38.
14:00 ~~Emptying~~ Development Water ~~to~~ from drums.
14:26 Drs Develop mw0032.
14:59 Developing mw0032 Complete, Set up & Develop mw0031.
15:30 Developing mw31 Complete, Set up & Develop mw0029
15:49 Developing mw0029 Complete, move to mw0030.
16:15 ~~Re~~Developing mw0030 Complete, move to mw5 (mw0039) & Set up.
16:40 Begin Drilling mw0039.
~~15:25~~ Drilling, Set & Seal complete, Develop mw0039.
1725 pos
1750 Depart S.M

yards 1825

Plans/Future Activities

11/22/16
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: 39B
Project No.: FR1352F
Contractors: GPI Geoview

Date: 11/23/16
Task No.:

Work Performed

Well Installation: MW040
Soil Borings:
DPT:
Well Inventory:
Other: Develop wells

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 DMS Arrive Pad ops Bldg., GPI arrive, GeoTech arrives. DMS Conducts tailgate meeting.
Drillers Set up on MW0040 (MWR). Also Build pad for MW0039.
800 ~~Develop~~ DMS Drilling, set & Seal for MW0040 Complete, develop well.
8:15 Developing well Complete. Construct pad for MW0040.
9:00 Pad Complete, move to Inside pad & Develop MW0028.
9:49 Developing MW0028 Complete, Set up & Develop MW0026/MW0027 Cluster.
1045 Development of all wells Complete, Begin Cleaning up, Securing well & IDW Management.

Plans/Future Activities

11/23/16
Signature/Date

Geosyntec Consultants
Water Quality Instrument Calibration Form

Project/Site: LC39B Project #: FR1352E Field Personnel: Ben Coppenger

Water Quality Meter - Model/Serial #: YSI 556 MPS 15D100993 Turbidimeter - Model/Serial # HACH 2100Q 15060C04 1693

Dissolved Oxygen	DEP SOP FT 1500	Date	Time	Temp (°C)	Saturation (mg/L)[1]	Reading (mg/L)	Reading (%)	Pass or Fail
						Acceptance Criteria: +/- 0.3mg/L		
(CAL) (ICV) CCV		11-14-16	0631	22.04	8.744	9.04/8.744	103/100	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

Specific Conductance	DEP SOP FT 1200	Date	Time	Standard (mS/cm)	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail
						Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV		11-14-16	0623	1.0	160212E	2-17	1.040/1.0	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

pH	DEP SOP FT 1100	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail
						Acceptance Criteria: +/- 0.2 SU		
(CAL) (ICV) CCV		11-14-16	0604	7.0	160212B	8-17	7.18/7.0	(P) F
(CAL) (ICV) CCV			0613	4.0	160212A	2-17	4.09/4.0	(P) F
CAL ICV CCV			0622	10.0	150918H	3-17	9.82/10	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail
						Geosyntec Acceptance Criteria: +/- 5%		
(CAL) ICV CCV		11-14-16	0626	240@25	8032	9-19	242/240	(P) F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

Specific Conductance Probe Cleaned? Yes (No) Disolved Oxygen membrane Changed? Yes (No)

0.1 - 10 NTU Std 10 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%	
(CAL) (ICV) CCV	11-14-16	10.4/10	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

11 - 40 NTU Std 20 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%	
(CAL) (ICV) CCV	11-14-16	20.1/20	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

41 - 100 NTU Std 100 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%	
(CAL) (ICV) CCV	11-14-16	100/100	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

>100 NTU Std 800 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%	
(CAL) (ICV) CCV	11-14-16	801/800	(P) F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

1. See Table FS 2200-2 on the back of this form
CAL - Initial Calibration
ICV - Initial Calibration Verification
CCV - Continuing Calibration Verification
Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration
Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings < 0.1 mS/cm then one standard of 0.1 mS/cm is acceptable)
Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed (i.e. pH > 7)
If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Comments: MiniRae 3000 PID cal = 0 cal = 0.1, 100 ppm
isobutylene = 100.00 ppm / 100

Geosyntec consultants

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Water Quality Instrument Calibration Form

Project/Site: LC39B Project #: FRB57 FWG FR1352E Field Personnel: Will Gamble

Water Quality Meter - Model/Serial#: YSI 556 MPS 15D100993 Turbidimeter - Model/Serial#: 15060C041693

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria: +/-0.3 mg/L		
(CAL) ICV CCV	11/15/16	0715	22.13	8.727	8.98/8.72	102/100	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? (Yes) No					Acceptance Criteria: +/- 5%		
(CAL) ICV CCV	11/15/16	0715	NR	NR	WG 1	1.07/1	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
(CAL) (ICV) CCV	11/15/16	0715	96H452	8/18	4	4	(P) F
(CAL) (ICV) CCV	"	"	66H459	8/18	7	7.16/7.00	(P) F
(CAL) (ICV) CCV	"	"	66B001	8/18	10	10.20	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes (No)					Geosyntec Acceptance Criteria: +/- 5%		
CAL (ICV) CCV	11/15/16	715	66F449	2/17	200	200	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
~~CAL ICV CCV~~	~~11/15/16~~	~~10~~		~~P F~~ WG
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		WG
(CAL) ICV CCV	11/15/16	20	20.4	(P) F (P)
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
WG		Acceptance Criteria: +/- 6.5%		
~~CAL~~ (ICV) CCV	11/15/16	100	102	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
WG		Acceptance Criteria: +/- 5%		
~~CAL~~ (ICV) CCV	11/15/16	800	804	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration

ICV = Initial Calibration Verification

CCV = Continuing Calibration Verification

* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

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Water Quality Instrument Calibration Form

Project/Site: 39B Project #: WL6 ~~FR1357~~ WL6 FR1352 Field Personnel: Will Garde

Water Quality Meter - Model/Serial#: YSI 556 MPS 15D100993 Turbidimeter - Model/Serial#: 15060C041693

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria:+/-0.3 mg/L		
(CAL) ICV CCV	11/16/16	0645	16.41	9.787	9.701	99/100	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes No					Acceptance Criteria: +/- 5%		
(CAL) ICV CCV	11/16/16	0720	664453	8/17	1.	1.227/1	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
(CAL) ICV CCV	11/16/16	0650	664454	8/18	7	7/7	(P) F
(CAL) ICV CCV	↓	↓	664457	8/18	4	3.92/4	(P) F
(CAL) ICV CCV	↓	↓	664461	8/18	10	10.02	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes No					Geosyntec Acceptance Criteria: +/- 5%		
(CAL) ICV CCV	11/16/16	0710	66 [illegible]	2/17	200	201/200	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
WL6			Acceptance Criteria: +/- 10%	
CAL ICV CCV	[illegible]	WL6		P F
(CAL) ICV CCV	11/16/16	10	9.98	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
WL6 WL6			Acceptance Criteria: +/- 8%	
(CAL) ICV CCV	11/16/16	20	22.5	P (F)
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
WL6			Acceptance Criteria: +/- 6.5%	
(CAL) ICV CCV	11/16/16	160	103	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
WL6			Acceptance Criteria: +/- 5%	
(CAL) ICV CCV	11/16/16	800	808	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration

ICV = Initial Calibration Verification

CCV = Continuing Calibration Verification

* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

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Water Quality Instrument Calibration Form

Project/Site: LC39B Project #: FR1352E Field Personnel: Ben Coppenger

Water Quality Meter - Model/Serial#: YSI 556 MPS 09F101281 Turbidimeter - Model/Serial#: HACH 2100Q 15060C04 1693

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria: +/- 0.3 mg/L		
(CAL) (ICV) CCV	11-18-16	0734	17.69	9.526	9.800/9.526	103/100	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes No					Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV	11-18-16	0715	6GJ217	10-17	1.0	1.03/1.0	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
(CAL) (ICV) CCV	11-18-16	0702	6GJ218	10-18	7.0	7.04/7.0	(P) F
(CAL) (ICV) CCV		0708	6GJ216	10-18	4.0	4.03/4.0	(P) F
(CAL) (ICV) CCV	V	0712	6GH45	8-18	10.0	9.97/10	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes No					Geosyntec Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV	11-18-16	0725	66J219	7-17	200025	193.7/200	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
(CAL) (ICV) CCV	11-18-16	10	9.93/10	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
(CAL) (ICV) CCV	11-18-16	20	19.95/20	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
(CAL) (ICV) CCV	11-18-16	100	98.7/100	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV	11-18-16	800	795/800	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration
ICV = Initial Calibration Verification
CCV = Continuing Calibration Verification
* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration
Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)
Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if neede
If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec consultants

Water Quality Instrument Calibration Form

Project/Site: LC393 Project #: FR1352E Field Personnel: Ben Coppenger

Water Quality Meter - Model/Serial#: YSI 556 MPS 15D100993 Turbidimeter - Model/Serial#: HACH 2100Q 15060C04157

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
			17.01	9.663	Acceptance Criteria:+/-0.3 mg/L		
(CAL) (ICV) CCV	11-18-16	0730	~~16.478~~	~~9.705~~	10.87/9.665	112.5/100	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes No					Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV	11-8-16	0717	6GJ217	10-17	1.0	1.040/1.0	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
(CAL) (ICV) CCV	11-18-16	0700	6GJ219	10-18	7.0	7.06/7.0	(P) F
(CAL) (ICV) CCV		0706	6GJ216	10-18	4.0	3.96/4.0	(P) F
(CAL) (ICV) CCV	N/	0710	6GH456	8-18	10.0	9.85/10.0	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes No					Geosyntec Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV	11-18-16	0723	6GJ219	7-17	200 @ 25	188.6/200	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
(CAL) (ICV) CCV	11-18-16	10	10/10	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
(CAL) (ICV) CCV	11-18-16	20	19.5/20	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
(CAL) (ICV) CCV	11-18-16	100	98.4/100	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV	11-18-16	800	804/800	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration

ICV = Initial Calibration Verification

CCV = Continuing Calibration Verification

* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if neede

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec consultants

Water Quality Instrument Calibration Form

Project/Site: ER1352E / LC39B Project #: ER1352E Field Personnel: M. Burnham

Water Quality Meter - Model/Serial#: YSI EXO MPS 16D100493 Turbidimeter - Model/Serial#: HACH 2100Q 15060C041643

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria:+/-0.3 mg/L		
(CAL) (ICV) CCV	11/21/16	0745	17.77	9.506	10.05/9.05	NR/99.7	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes (No)					**Acceptance Criteria: +/- 5%**		
(CAL) (ICV) CCV	11/21/16	0824	6GH453	03-17	1.000	1.133/1.000	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
			→ 6GH454		**Acceptance Criteria: +/- 0.2 SU**		
(CAL) (ICV) CCV	11/21/16	0803	~~6GH454~~	03-18	7.00	6.93/7.00	(P) F
(CAL) (ICV) CCV	↓	0809	6GH452	03-18	4.00	3.22/4.00	(P) F
(CAL) (ICV) CCV	↓	0819	6GC061	03-18	10.00	9.94/9.99	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes (No)					**Geosyntec Acceptance Criteria: +/- 5%**		
(CAL) (ICV) CCV	11/21/16	0830	6GE449	01-17	200 @ 25	260.5/200	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
(CAL) (ICV) CCV	11/21/16	10	8.83/10.3	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
(CAL) (ICV) CCV	11/21/16	20	17.9/20.3	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
(CAL) (ICV) CCV		100	93.5/99.7	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV		800	762/786	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration

ICV = Initial Calibration Verification

CCV = Continuing Calibration Verification

* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec Consultants
Water Quality Instrument Calibration Form

Project/Site: 39B FRISTOE Project #: Field Personnel: D. Sizemore

Water Quality Meter - Model/Serial #: YSI 556 ISI 10993 Turbidimeter - Model/Serial # Hach 2100 Q

Dissolved Oxygen	DEP SOP FT 1600	Date	Time	Temp (°C)	Saturation (mg/L)[1]	Reading (mg/L)	Reading (%)	Pass or Fail
						Acceptance Criteria: +/- 0.3mg/L		
CAL ICV CCV		11/22/16	5:45	22.10	8.727	9.00-8.73	103/100	P F
CAL ICV CCV		11/23/16	6:50	22.00	8.744	8.78/8.74	102/100	P F
CAL ICV CCV								P F
CAL ICV CCV								P F

Specific Conductance	DEP SOP FT 1200	Date	Time	Standard (mS/cm)	Standard Lot #	Standard Exp. Date	Reading (mS/cm)	Pass or Fail
							Acceptance Criteria: +/- 5%	
CAL ICV CCV		11/22/16	5:40	1.000	16821	8/17	1.119-1.001	P F
CAL ICV CCV		11/23/16	6:55	1.000	"	8/17	1.125-1.000	P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F
CAL ICV CCV								P F

pH	DEP SOP FT 1100	Date	Time	Standard (SU)	Standard Lot #	Standard Exp. Date	Reading (SU)	Pass or Fail
							Acceptance Criteria: +/- 0.2 SU	
CAL ICV CCV		11/22/16	5:50	7.00	MG83515	8/19	7.19-7.00	P F
CAL ICV CCV		↓	5:53	4.00	GH452	8/18	4.09-4.00	P F
CAL ICV CCV		↓	5:56	10.00	66C061	3/18	10.09-10.01	P F
CAL ICV CCV		11/23/16	7:00	"	"	"	7.03-7.00	P F
CAL ICV CCV		↓	7:02	"	"	"	4.11-4.00	P F
CAL ICV CCV		↓	7:09	"	"	"	10.10-10.02	P F

ORP	SOP N/A	Date	Time	Std. mV @ Temp °C	Standard Lot #	Standard Exp. Date	Reading (mV)	Pass or Fail
						Geosyntec Acceptance Criteria: +/- 5%		
CAL ICV CCV		11/22/16	6:00	66.4/19	200	2/17	219-200	P F
CAL ICV CCV		11/23/16	7:13	"	"	"	201-202	P F
CAL ICV CCV								P F
CAL ICV CCV								P F

Specific Conductance Probe Cleaned? Yes (No) Disolved Oxygen membrane Changed? Yes (No)

0.1 - 10 NTU Std 10 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%	
CAL ICV CCV	11/22	9.0-12.0	P F
CAL ICV CCV	11/23	10.0	P F
CAL ICV CCV			P F
CAL ICV CCV			P F

11 - 40 NTU Std 20 NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%	
CAL ICV CCV	11/22	20.1	P F
CAL ICV CCV	11/23	20.0	P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

41 - 100 NTU Std ___NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%	
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

>100 NTU Std ___NTU	Date	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%	
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F
CAL ICV CCV			P F

1. See Table FS 2200-2 on the back of this form

CAL - Initial Calibration

ICV - Initial Calibration Verification

CCV - Continuing Calibration Verification

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings < 0.1 mS/cm then one standard of 0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if needed (i.e. pH > 7)

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Comments:

Geosyntec consultants

Geosyntec consultants

WELL DEVELOPMENT DATA FORM

Site Name: 39B
Well Name: MW0010

Depth To Bottom:
(Initial) 32.09
(Final) 32

Static Water Level:
(Initial) 4.09
(Final) 4.09

Field Cleaning of Equip: New tubing, WL meter
Measuring Point: TOC
Casing I.D.: 1"

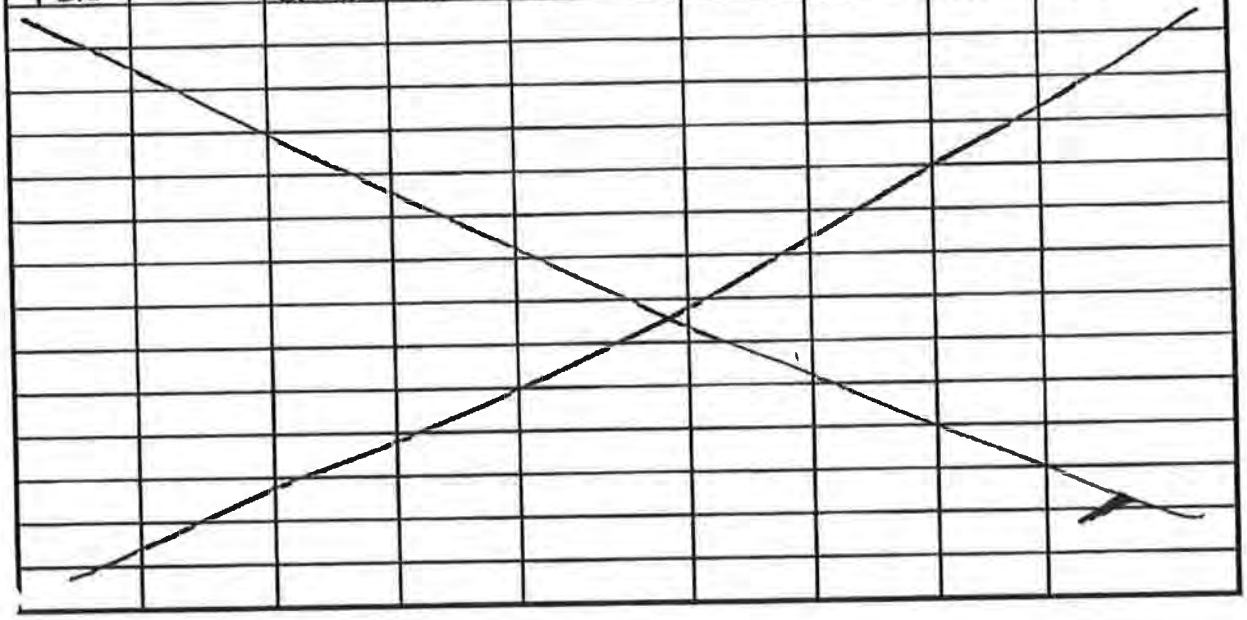
Project Number: FR1352E
Date Installed: 11/14/16
Date Developed: 11/14/16

Pump Type: Centrifugal
(Capacity) >1 gpm

Well Volume: ~~~2.05 gal~~ WKG 0.041 x 32 = 1.31 gal

Geosyntec Representative: Will Garde
Drilling Firm Representative: GPI Paul Otto
Purge Water Containment: 55gal steel close top NASA approved Drum

Time	Cumulative Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (%) Comments
1155	5	7.80	25	.5	Exceed	.24	89.9	NR
1200	9	6.53	25.29	1.01	Exceed	.5	16.0	↓
1203	14	5.96	25.73	~~1.093~~ 1.083	390	.54	1.5	↓
1207	17	6.34	26	1.091	672	.54	2.1	↓
1210	20	6.43	25.86	1.084	259	.53	2.3	6.1
1215	22	6.26	25.68	1.077	237	.53	3.1	14.5



Geosyntec consultants

WELL DEVELOPMENT DATA FORM

Site Name: 39B
Well Name: MW0011

Depth To Bottom:
(Initial) —
(Final) 50

Static Water Level:
(Initial) 5.05
(Final) 5.05

Field Cleaning of Equip: DI water, new tubing
Measuring Point: TOC
Casing I.D.: 1"

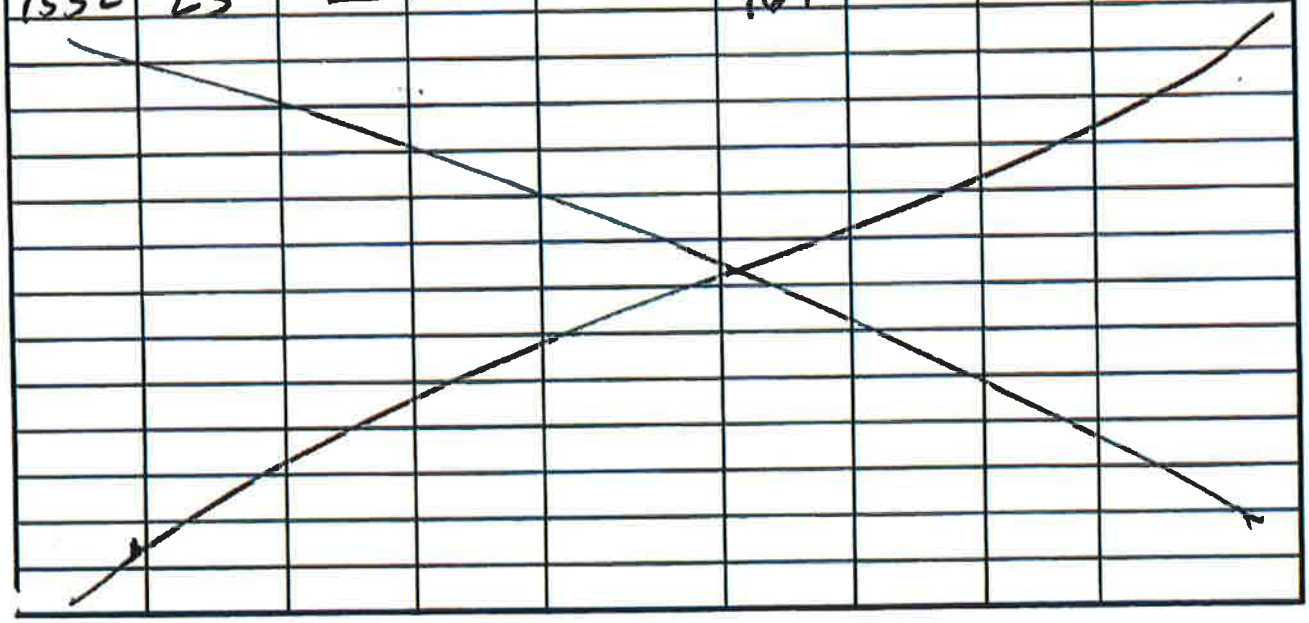
Project Number: FI2135.02E.07
Date Installed: 11/14/16
Date Developed: 11/14/16

Pump Type: Centrifugal
(Capacity) ~~5 gpm~~ WK6 >1 gpm WK6

Well Volume: ~~2.05 gal~~ 0.041 x 50 = 2.05 gal

Geosyntec Representative: Will Gardel
Drilling Firm Representative: GPE Paul Otto
Purge Water Containment: 55 gal steel close top NASA approved Drums

Time	Cumulative Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (%) Comments
~~0734~~	—							
1540	5	6.97	25.1	1.07	Exceed	.54	41.0	26
1545	10	7.09	24.89	1.051	Exceed	.52	37.9	16.5
1550	15	7.01	25.36	1.048	549	.52	34.1	22.0
1550	20	6.93	25.60	1.037	491	.51	31.1	16.9
1551	22	6.93	25.83	1.043	235	.51	29.1	14.5
1552	23	—	—	—	167	—	—	—



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WELL DEVELOPMENT DATA FORM

Site Name: 29B
Well Name: MW0012 (MW-0)

Depth To Bottom:
(Initial) 50
(Final) 50

Static Water Level:
(Initial) 8.7
(Final) 8.0

Field Cleaning of Equip: DI water, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: ~~FR1357.07~~ WG FR1352E
Date Installed: 11/15/16
Date Developed: 11/15/16

Pump Type: Centrifugal
(Capacity) ~1 gpm

Well Volume: 50 * 0.041 = 2.05 gal

Geosyntec Representative: Will Gardt
Drilling Firm Representative: GEI Paul Otto
Purge Water Containment: 55 gal Nasa approved Drum steel

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L) Comments
0910	2.5	8.116	26.29	1.97	Exceed	.54	55.9	2.12
0915	5	7.89	26.47	1.172	Exceed	.58	64.5	1.40
0917	10	7.81	25.9	1.211	911	.60	66.6	1.52
0918	12.5	7.69	25.81	1.230	238	.61	67.2	2.28
0922	20	7.55	27.37	1.251	363	.62	65.6	1.67
0923	22.5	-	-	-	293	-	-	-

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WELL DEVELOPMENT DATA FORM

Site Name: 39B
Well Name: MW0013 (mw-L)

Depth To Bottom:
(Initial) 26
(Final) 26

Static Water Level:
(Initial) 7.5
(Final) 7.5

Field Cleaning of Equip: DI meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

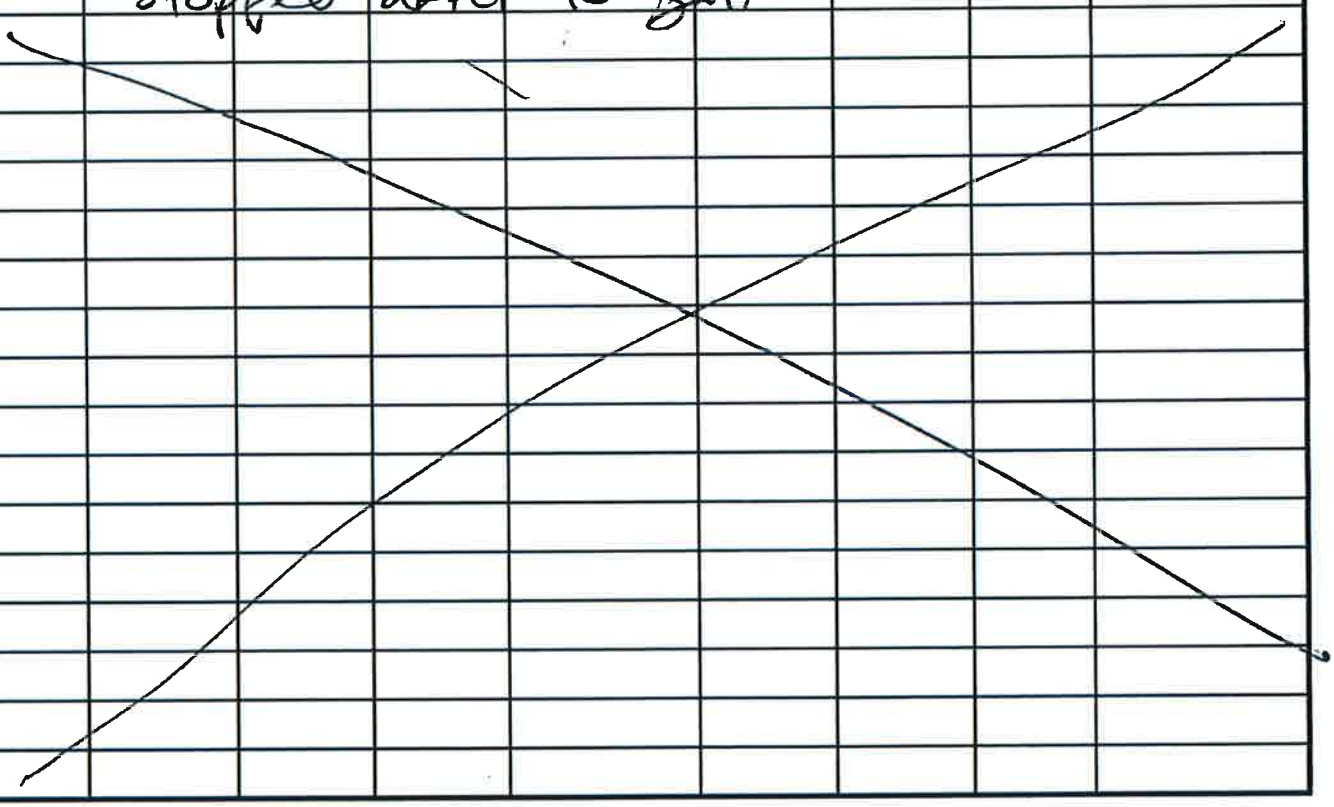
Project Number: ~~FR1357/07766~~ FR1352E
Date Installed: 11/15/16
Date Developed: 11/15/16

Pump Type: Centrifugal
(Capacity) 1 gpm

Well Volume: 26 × 0.041 = 1.07 gal

Geosyntec Representative: Will Garde
Drilling Firm Representative: GPI Paul Otto
Purge Water Containment: 55 gal steel NASA approved Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L) Comments
1107	2.5	6.90	27.23	1.274	Exceed	.63	33.5	1.08
1110	7.5	6.44	27.31	1.124	Exceed	.55	7.4	1.01
1117	15	5.67	26.83	1.063	Exceed	.52	18.7	0.80
—	Stopped after 15 gal.							



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WELL DEVELOPMENT DATA FORM

Site Name: 39B
Well Name: MW-0014 (MW-K, 16-26)

Depth To Bottom:
(Initial) 26
(Final) 26

Static Water Level:
(Initial) 5.1
(Final) 5.0

Field Cleaning of Equip: bk water, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: ~~FR1357/07~~ WG FR1352E
Date Installed: 11/15/16
Date Developed: 11/15/16

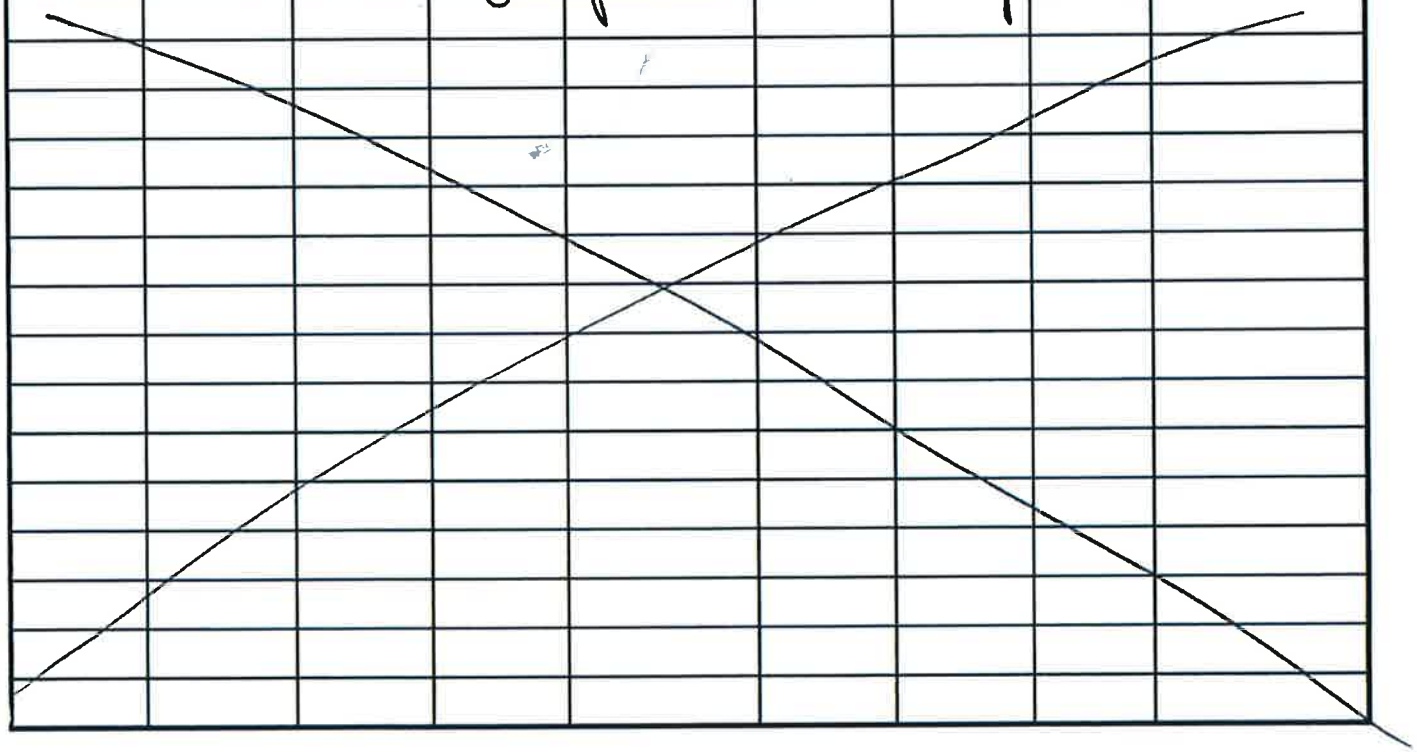
Pump Type: Centrifugal
(Capacity) > 1 gpm

Well Volume: 26 × 0.041 = 1.07 gal

Geosyntec Representative: Will Garde
Drilling Firm Representative: GPI Paul Otto
Purge Water Containment: 55 gal steel NASA approved drum

(cumulative)

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L) Comments
1332	5	6.53	26.12	1.265	Exceed	.63	54.4	0.94
1333	10	6.19	26.27	1.238	Exceed	.61	48.8	1.36
1335	15	6.02	26.13	1.246	Exceed	.62	44.3	0.96
		Stopped development due to water not clearing up. All dissolved particulates						

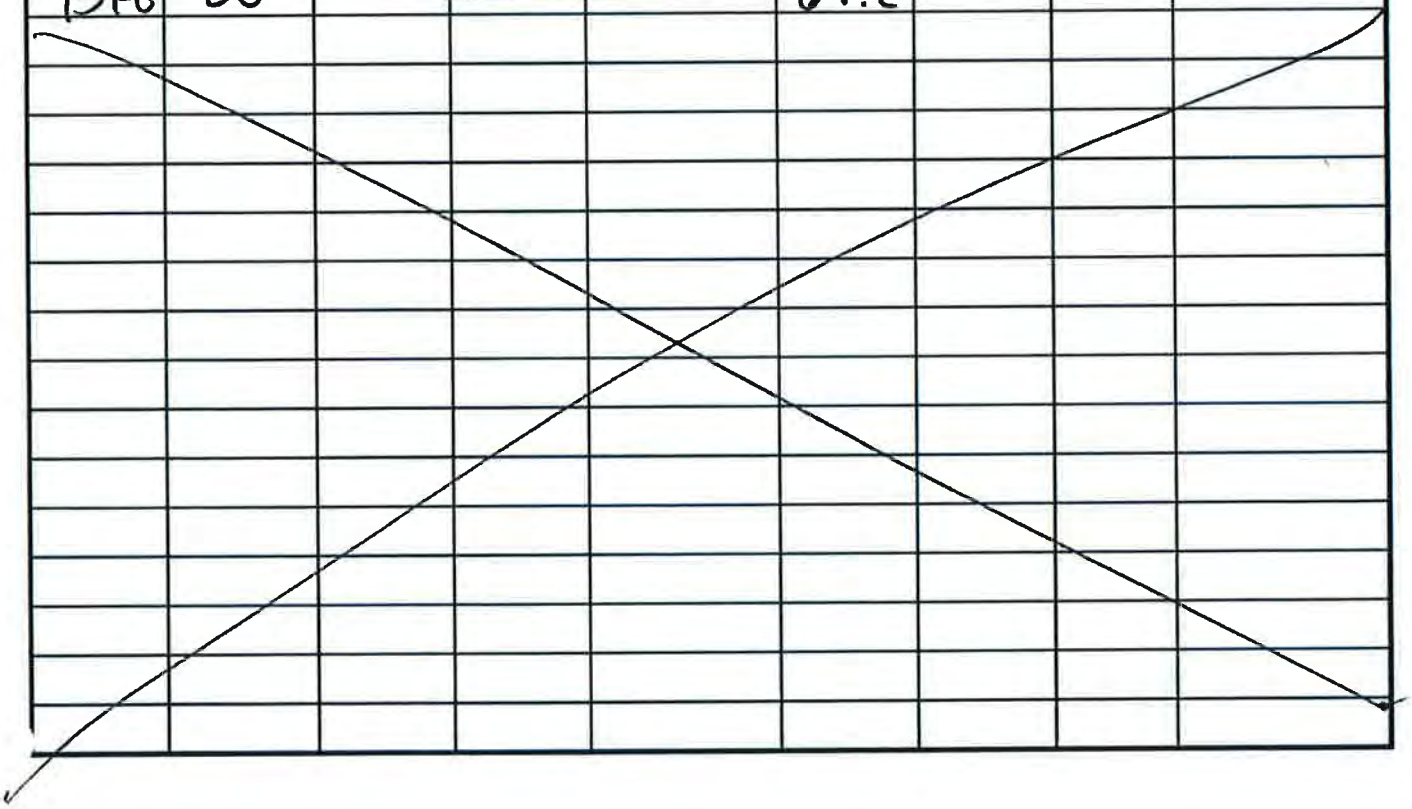


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WELL DEVELOPMENT DATA FORM

Site Name: 39B	Project Number: ~~FR1357/07~~ FR1352E (wb)
Well Name: MW0015	Date Installed: 11/15/16
Depth To Bottom: (Initial) 36.3 (Final) 36.3	Date Developed: 11/15/16
Static Water Level: (Initial) 4.3 (Final) 5.0	Pump Type: Centrifugal (Capacity) >1 gpm
Field Cleaning of Equip: WL meter, new tubing	Well Volume: 36 x 0.041 = 1.48 gal
Measuring Point: TOC	Geosyntec Representative: Will Gardel
Casing I.D.: 4"	Drilling Firm Representative: GPI Paul Otto
	Purge Water Containment: 55 gal. steel NASA approved Drum

Time	Volume Removed (gal) (Cumulative)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L) Comments
1511	5	6.94	26.30	1.027	Exceed	.51	58.6	1.07
1512	7.5	6.78	26.02	1.188	103	.59	55	2.05
1514	10	6.59	25.95	1.240	84.6	.62	50.3	1.70
1516	15	6.63	25.69	1.257	224	.62	54.7	1.94
1516	20	—	—	—	63.2	—	—	—



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WELL DEVELOPMENT DATA FORM

Site Name: LC39B
Well Name: MW0016

Depth To Bottom:
(Initial) 30
(Final) 30

Static Water Level:
(Initial) 3.5
(Final) 3.5

Field Cleaning of Equip: WL meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

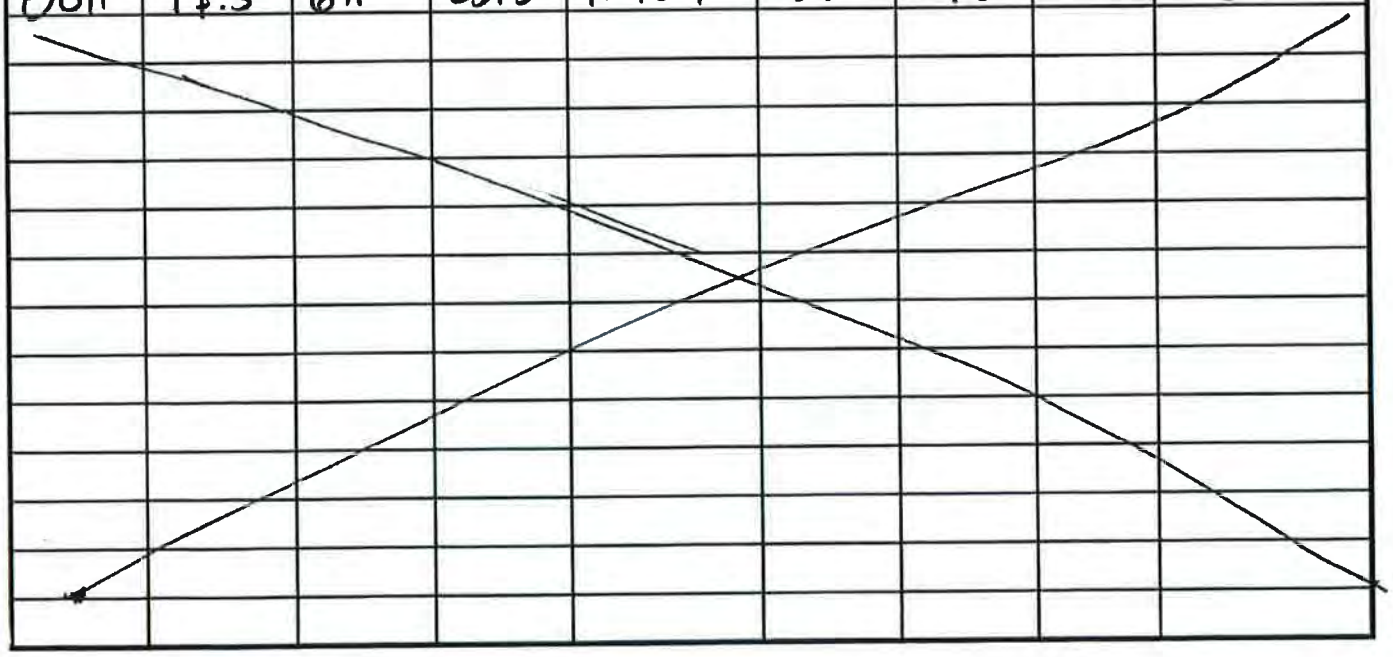
Project Number: ~~FR1357~~ WG FR1352E
Date Installed: 11/16/16
Date Developed: 11/16/16

Pump Type: Centrifugal
(Capacity) >1 gpm

Well Volume: 30 x 0.041 = 1.23 gal

Geosyntec Representative: Iwin Garde
Drilling Firm Representative: Paul Otto GPI
Purge Water Containment: 55gal Steel NASA approved Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L) ~~Comments~~
0800	2.5	8.23	19.44	1.382	Exceed	.69	93.6	7.45
0803	5	7.24	22.89	1.399	Exceed	.70	57.8	1.82
0805	7.5	6.45	25.21	1.406	910	.70	35.4	1.54
0807	10	6.26	24.92	1.401	436	.70	33.8	1.43
0809	12.5	6.09	25.29	1.416	375	.70	21.0	1.20
0810	15	6.01	25.39	1.411	310	.71	14.7	1.02
0811	17.5	6.14	25.34	1.409	288	.70	3.0	1.26



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WELL DEVELOPMENT DATA FORM

Site Name: LG39B
Well Name: MW0017

Depth To Bottom:
(Initial) 39.61
(Final) 39.61

Static Water Level:
(Initial) 3.40
(Final) 3.40

Field Cleaning of Equip: Spray Decon, New tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352
Date Installed: ~~11/16/16~~ MW0017 11/16/16
Date Developed: ~~11/18/16~~ MW0017 11/18/16

Pump Type: Centrifugal
(Capacity) ~~5 gpm~~ MW0017 >1gpm

Well Volume: 39.61 × .041 = 1.62 gal

Geosyntec Representative: W. Gardc
Drilling Firm Representative: Paul Otte
Purge Water Containment: 55gal steel NASA Approve Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L) Comments
0912	5	7.43	22.56	1.183	645	.59	-140.1	1.47
0914	7.5	7.06	23.67	1.226	78.3	.61	-169.5	0.67
0915	10	6.91	23.70	1.248	45.5	.62	-186.3	1.05
0917	15	6.74	23.77	1.268	27.8	.63	-207.7	1.25
—	Finished, third loop and 15 gal removed.							

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WELL DEVELOPMENT DATA FORM

Site Name: LC39B
Well Name: MW0047B
WB

Depth To Bottom:
(Initial) ~~NR~~ WB NR
(Final) ~~29.60~~ WB 29.60

Static Water Level:
(Initial) ~~NR~~ WB NR
(Final) ~~2.74~~ WB 2.74

Field Cleaning of Equip: Decon spray, new tubing, bkmeter
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR 1352
Date Installed: 11/16/17
Date Developed: 11/18/17

Pump Type: Centrifugal
(Capacity) >1 gpm
Well Volume: ~~3.5 lol 10.041 = lvol~~ 29.60 x 0.041 = 1.214 gal (30 ft)

Geosyntec Representative: W. Garde
Drilling Firm Representative: GPI P. Otte
Purge Water Containment: 55 gal NASA approved Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L) Comments
0808	2.5	7.62	21.23	.991	Exceed	.49	-5.4	1.11
0811	5	7.80	21.82	.991	Exceed	.49	-48.5	1.01
0814	7.5	7.32	24.19	.954	Exceed	.47	-84.3	2.14
0817	10	7.14	24.23	.947	" "	.47	-93.1	1.88
0820	12.5	6.77	24.34	.936	" "	.46	-89.3	2.95
			Finished since turb not dropping and					
			12.5 gal pumped					

Field Forms Template_NASA

Geosyntec consultants

WELL DEVELOPMENT DATA FORM

Site Name: LL39B
Well Name: MW0019

Depth To Bottom:
(Initial) NR
(Final) 39.61

Static Water Level:
(Initial) NR
(Final) ~~2.64~~ WG 2.74

Field Cleaning of Equip: Spray Decon, WL Meter
Measuring Point: TOC new tubing
Casing I.D.: 1"

Project Number: FR1352
Date Installed: ~~11/16/16~~ WG 11/16/16
Date Developed: 11/18/16

Pump Type: Centrifugal
(Capacity) >1 gpm

Well Volume: 39.61 x 0.041 = 1.624 gal

Geosyntec Representative: Liz Goarde
Drilling Firm Representative: Paul Otte
Purge Water Containment: 55 gal steel NRA approved Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L) Comments
0840	2.5	7.00	24.30	.987	Exceed	.619	-124.8	1.67
0842	5	7.06	23.88	1.060	502	.53	-133.1	1.73
0844	7.5	6.99	23.85	.931	217	.45	-151.5	3.01
0846	10.0	6.94	23.92	1.108	53.7	.55	-93.8	0.41
0850	15	6.86	23.97	1.130	111	.56	-200.8	0.27
—	—	Stopped, Turb low and more removed then added						

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WELL DEVELOPMENT DATA FORM

Site Name: LC39B
Well Name: MW0020

Depth To Bottom:
(Initial) 49.30
(Final) 49.35

Static Water Level:
(Initial) 2.45
(Final) 2.91

Field Cleaning of Equip: Spray Decon, new tubing, WL meter
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR 13352
Date Installed: 11/17/16
Date Developed: 11/18/16

Pump Type: Centrifugal
(Capacity) 41 gpm

Well Volume: 49.35 x .041 = 2.02 gal

Geosyntec Representative: W. Gardt
Drilling Firm Representative: Paul Otte
Purge Water Containment: 55 gal ~~Federal~~ NASA approved drum WC

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L) ~~Comments~~
1017	5	8.66	23.96	1.950	Exceed	1.02	-122.6	1.23
1021	10	8.38	24.02	1.620	453	1.29	-210.4	0.55
1026	15	8.23	24.00	1.695	212	1.35	-205.1	0.48
1030	20	8.15	24.06	1.718	90.0	1.37	-196.4	0.48
—	—	Stopped at 20 gal, Turb low, 20 gal added -20 removed						

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WELL DEVELOPMENT DATA FORM

Site Name: LC-39B
Well Name: MW-21

Depth To Bottom:
(Initial) 30
(Final) 30

Static Water Level:
(Initial) 2.81
(Final) 2.82

Field Cleaning of Equip: yes, WL meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352E
Date Installed: 11-17-16
Date Developed: 11-18-16

Pump Type: Centrifugal
(Capacity) >0.5 gpm

Well Volume: —

Geosyntec Representative: Ben Copperger
Drilling Firm Representative: Bryan N.
Purge Water Containment: 55 gal. Steel closed top
NASA approved datum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments
1009	start	7.96	28.81	0.867	out of range	0.42	37.3	Brown
1017	6	6.67	27.90	0.502	864	0.24	34.7	Brown
1028	15	5.96	27.92	1.184	out of range	0.58	-30.3	Brown
1037	20	6.10	29.16	1.237	out of range	0.61	-111.3	Brown
1043	24	5.65	27.93	1.246	26.5	0.62	-165.8	Brown

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WELL DEVELOPMENT DATA FORM

Site Name: LC39B
Well Name: MW-22

Depth To Bottom:
(Initial) 40
(Final) 40

Static Water Level:
(Initial) 2.88
(Final) 2.85

Field Cleaning of Equip: yes, w/ meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352E
Date Installed: 11-17-16
Date Developed: 11-18-16

Pump Type: Centrifugal
(Capacity) > 0.5 gpm

Well Volume: —

Geosyntec Representative: Ben Copperger
Drilling Firm Representative: Bryan N.
Purge Water Containment: 55 gal sleeve closed top NASA approved drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments
0938	start	8.09	27.78	2.027	out of range	0.98	52.3	Brown
0948	5	7.76	27.11	1.407	336	0.70	49.9	Grey
0955	10	7.21	26.70	1.356	101	0.67	27.0	Grey
1008	18	7.23	27.89	1.446	98	0.73	15.3	[illegible]

Geosyntec consultants

WELL DEVELOPMENT DATA FORM

Site Name: LCAFB BC
Well Name: MW-[illegible]23

Depth To Bottom:
(Initial) 50
(Final) 50

Static Water Level:
(Initial) 2.87
(Final) 2.90

Field Cleaning of Equip: yes, WL meter,
Measuring Point: TOC www tubing
Casing I.D.: 1"

Project Number: FR1352E BC
Date Installed: [illegible] 11-16-16
Date Developed: 11-18-16

Pump Type: Centrifugal
(Capacity) > ~0.5

Well Volume: —

Geosyntec Representative: Ben Coppenger
Drilling Firm Representative: Bryan N.
Purge Water Containment: 55 gal steel closed top DOT approved drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments
0910.5	start	8.23	22.51	0.747	out of range	0.37	60.6	Brown
0918	5	7.97	26.59	2.748	897	1.42	40.9	Brown
0930	11	7.85	26.50	3.192	115	1.67	43.3	Grey
0935	13	7.87	26.49	3.348	66.5	1.75	44.8	yellow

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WELL DEVELOPMENT DATA FORM

Site Name: LC39B
Well Name: MW 24

Depth To Bottom: (Initial) 40 (Final) 40
Static Water Level: (Initial) 3.31 (Final) 3.33
Field Cleaning of Equip: yes, WL meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352E
Date Installed: 11-17-16
Date Developed: 11-18-16
Pump Type: Centrifugal
(Capacity) ~~~0.5 gpm~~ >1 gpm switched to 1/2" tubing
Well Volume: -
Geosyntec Representative: Ben Coppenger
Drilling Firm Representative: Bryan N.
Purge Water Containment: 55 gal Steel, ~~open~~ closed top NASA approved drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments
1129	Start	8.52	28.29	1.132	~~Brown~~	0.53	-73.8	Brown
1130	5	7.73	25.33	1.015	450	0.50	-79.5	Brown
1133	10	7.13	24.99	1.214	278	0.60	-104.2	Brown
1136	15	7.00	24.77	1.494	126	0.75	-114.0	grey
1139	20	6.94	24.77	1.499	78.6	0.75	-137.5	yellow
1142	25	6.85	24.88	1.608	112	0.81	-165.2	yellow

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WELL DEVELOPMENT DATA FORM

Site Name: LC 39B
Well Name: MW-25

Depth To Bottom:
(Initial) 50
(Final) 50

Static Water Level:
(Initial) 3.30
(Final) 3.35

Field Cleaning of Equip: yes, 10 L meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352F
Date Installed: 11-17-16
Date Developed: 11-18-16

Pump Type: Centrifugal
(Capacity) > 0.5 gpm

Well Volume: —

Geosyntec Representative: Ben Coppenger
Drilling Firm Representative: Bryan N.
Purge Water Containment: 55 gal steel closed top NASA approved drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments
1050	start	6.80	25.56	~~0.0~~ 2.044	out of range	1.06	-80.9	Brown
1056	5	7.85	28.62	3.654	Out of range	1.87	-122.1	Brown
1106	10	7.94	28.20	4.634	491	2.46	-116.3	Grey
1113	15	8.03	30.09	4.701	25.3	2.49	-100.1	Clear
1120	20	7.98	30.36	4.669	739	2.47	-96.4	~~Clear~~ Brown
1126	~~H2O~~ 26	8.04	30.31	4.770	19.2	2.53	-103.9	clear

surged tubing

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WELL DEVELOPMENT DATA FORM

Site Name: 39B
Well Name: MW 0026

Depth To Bottom:
(Initial) 40.0
(Final) 40.0

Static Water Level:
(Initial) 3.79
(Final) 3.82

Field Cleaning of Equip: WL meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352C
Date Installed: 11/17/16
Date Developed: 11/23/16

Pump Type: Cent. pump
(Capacity) >1gpm

Well Volume: 1.64 gal

Geosyntec Representative: D. Sizemore
Drilling Firm Representative: Brian N.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	~~Comments~~ DO
1000	START							
1005	4	7.62	25.06	4.207	196	2.23	-35.4	2.96
1013	9	7.70	25.09	4.209	629	2.23	-35.9	1.98
1018	12	7.70	25.10	4.207	589	2.23	-36.7	1.99

DMS

Geosyntec consultants

WELL DEVELOPMENT DATA FORM

Site Name: 39B
Well Name: MW0027

Depth To Bottom:
(Initial) 50
(Final) 50

Static Water Level:
(Initial) 3.50
(Final) 3.50

Field Cleaning of Equip: WL meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: ~~HHDMS~~ FR1352E
Date Installed: 11/17/16
Date Developed: 11/23/16

Pump Type: Cent. pump
(Capacity) >1 gpm

Well Volume: 2.05 gal

Geosyntec Representative: D. Sizemore
Drilling Firm Representative: Brian N.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	~~Comments~~ → DO
1030	start							→
1035	3	7.50	25.09	4.210	613	2.25	-49.7	1.25
1040	8	7.49	25.10	4.209	600	2.28	-49.2	1.35
1045	12	7.50	25.00	4.207	403	2.25	-49.9	1.30

Geosyntec consultants

WELL DEVELOPMENT DATA FORM

Site Name: 393
Well Name: MW0029

Depth To Bottom:
(Initial) 49.9
(Final) 49.9

Static Water Level:
(Initial) 3.79
(Final) 3.83

Field Cleaning of Equip: DI water, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR13526
Date Installed: 11/17/16
Date Developed: 11/23/16

Pump Type: Cent. pump
(Capacity) > 1 gpm

Well Volume: 2.05 gal

Geosyntec Representative: D. Sizemore
Drilling Firm Representative: Brian N.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	~~Comments~~ DO
936	5 Jars	*						
939	2.0	6.79	25.15	2.677	829	1.38	-25.1	.47
942	3.0	6.80	25.20	2.679	672	1.42	-25.3	.40
949	~~3~~ 6.0	6.81	25.21	2.700	617	1.43	-25.5	.39

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WELL DEVELOPMENT DATA FORM

Site Name: 33B
Well Name: MW0029

Depth To Bottom:
(Initial) NR
(Final) NR

Static Water Level:
(Initial) 5.00
(Final) 5.00

Field Cleaning of Equip: wL meter, new tubing
Measuring Point: TOC
Casing I.D.: 14

Project Number: FR135-2R
Date Installed: 11/21/16
Date Developed: 11/22/16

Pump Type: Cent. Pump
(Capacity) > 1 gpm

Well Volume: 1.64 gal

Geosyntec Representative: P. Sizemore
Drilling Firm Representative: Brian N.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO Comments
15:35	START							
15:40	4.0	7.67	25.55	1.622	473	.82	-29.0	2.21
15:44	~~4~~ 6.0	7.91	25.13	1.622	414	.83	-29.0	1.90
15:49	9.0	7.91	25.15	1.621	398	.85	-30.0	1.89

DO

NR = not recorded

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WELL DEVELOPMENT DATA FORM

Site Name: 39B
Well Name: MW0030

Depth To Bottom:
(Initial) 49.9
(Final) 50.0

Static Water Level:
(Initial) 3.97
(Final) 4.00

Field Cleaning of Equip: WL meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352 F2
Date Installed: 11/17/16
Date Developed: 11/22/16

Pump Type: Cent. pump
(Capacity) >1 gpm

Well Volume: 2.05 gal

Geosyntec Representative: D. Sizemore
Drilling Firm Representative: Brian W.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	~~Comments~~ DO
15:50	START							
15:53	2	6.93	27.91	1.034	>1000	.50	-25.0	1.72
15:59	6	6.99	27.98	1.034	700	.50	-30.1	1.25
16:15	13	7.00	27.99	1.034	629	.50	-30.1	1.30

DNF

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WELL DEVELOPMENT DATA FORM

Site Name: 39B
Well Name: MW0031

Depth To Bottom:
(Initial) 15.0
(Final) 15.0

Static Water Level:
(Initial) 4.39
(Final) 4.39

Field Cleaning of Equip: WL meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352E
Date Installed: ~~11/2/16~~ 11/7/16
Date Developed: 11/22/16

Pump Type: Cent
(Capacity) >1gpm

Well Volume: 0.62 gal

Geosyntec Representative: D. Siemons
Drilling Firm Representative: Brian N.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	~~Comments~~ DO
15:07	START				~~1000~~ 879			
15:12	2.5	7.48	28.37	.469		.35	-29.6	2.32
	Pumped Dry, Allow to Recharge							
15:30	Removed ~.5 Gallons, Pumped Dry.						Development Complete	

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WELL DEVELOPMENT DATA FORM

Site Name: LC39B
Well Name: MW0032

Depth To Bottom:
(Initial) 17.9
(Final) 17.9

Static Water Level:
(Initial) 4.45
(Final) 4.45

Field Cleaning of Equip: WL meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352E
Date Installed: 11/17/16
Date Developed: 11/22/16

Pump Type: Cent. pump
(Capacity) >1 gpm

Well Volume: 0.74 gal

Geosyntec Representative: D. Sizemore
Drilling Firm Representative: Brian N.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments DO
14:36	START				~~986~~ 886			
14:47	2.5	8.52	28.01	1.010	~~8.860~~	.49	-25.6	3.91 *
14:50	3.5	8.06	27.79	1.008	729	.49	-26.2	4.00 *
14:59	6.0	8.09	29.13	.775	675	.47	-29.4	3.31 *

DPS

* Pockets of Air in Development water flow.

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WELL DEVELOPMENT DATA FORM

Site Name: LC39B
Well Name: MW0033

Depth To Bottom:
(Initial) 48.82'
(Final) 48.82'

Static Water Level:
(Initial) NR
(Final) 7.03'

Field Cleaning of Equip: DTW meter; new tubing
Measuring Point: TOC (2.80' above land surface)
Casing I.D.: 1.0"

Project Number: FR1352E
Date Installed: 11/21/16
Date Developed: 11/21/16 (before grout)

Pump Type: Centrifugal
(Capacity) >1 gpm

Well Volume: ~1.84 gal

Geosyntec Representative: M. Burcham
Drilling Firm Representative: Brian N.
Purge Water Containment: 55-gal, steel, closed top NASA approved drum

Time	Volume Removed (gal) Cum.	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments
1157	1	8.17	24.98	1.078	OR	0.55	1.0	grey
1200	5	7.91	26.88	3.002	781	1.57	-9.5	orange
1205	12.5	7.74	25.77	3.768	343	1.98	-14.1	" "
1210	15	7.71	25.77	3.980	472	2.10	-14.6	" "
1215	18	7.69	25.77	4.151	135	2.20	-11.2	" "

OR = over range
NR = not recorded

Geosyntec consultants

WELL DEVELOPMENT DATA FORM

Site Name: LC34B
Well Name: MW0034

Depth To Bottom:
(Initial) 21.61'
(Final) 21.61'

Static Water Level:
(Initial) 7.58'
(Final) 7.58'

Field Cleaning of Equip: DTW meter, new tubing
Measuring Point: TOC
Casing I.D.: 1"

Project Number: FR1352E
Date Installed: 11/28/16
Date Developed:

Pump Type: Centrifugal
(Capacity) >1 gpm

Well Volume: ~0.74 gal

Geosyntec Representative: M. Burcham
Drilling Firm Representative: Brian N.
Purge Water Containment: 55-gal steel drums, NASA approved

Cum.

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments
1618	2.5	6.30	28.21	0.512	~~Brown~~ O.R.	0.24	-126.3	Brown
1623	5.0	6.02	27.70	0.543	O.R.	0.26	-164.7	" "
1628	7.5	6.05	27.53	0.580	O.R.	0.28	-184.1	Lighter Brown
1633	10.0	6.05	27.51	0.610	O.R.	0.29	-191.0	" "

O.R. = out of range

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WELL DEVELOPMENT DATA FORM

Site Name: LC39B
Well Name: MW0035

Depth To Bottom:
(Initial) 29.81'
(Final) 29.81'

Static Water Level:
(Initial) 5.78'
(Final) 5.81'

Field Cleaning of Equip: DTW meter; new tubing
Measuring Point: TOC (~1.70' Above land surface)
Casing I.D.: 1"

Project Number: FR1352F
Date Installed: 11/21/16
Date Developed:

Pump Type: centrifugal pump
(Capacity) ~1 gpm

Well Volume: ~1.15 gal

Geosyntec Representative: M. Burcham
Drilling Firm Representative: Brian N.
Purge Water Containment: 55 gal steel drum, NASA removed

Time	Volume Removed (gal) Cum.	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments
1450	2.5	6.66	27.93	0.555	O.R.	0.26	-53.3	Dark grey
1455	5.0	6.30	27.60	0.441	O.R.	0.21	-114.7	Dark brown
1500	7.5	6.16	27.62	0.434	O.R.	0.21	-148.3	" "
1505	10	6.08	27.59	0.430	O.R.	0.20	-176.6	" "
	Turbidity not changing. Developed more volume than used during construction							

O.R. = over range

Geosyntec consultants

WELL DEVELOPMENT DATA FORM

Site Name: LC34R
Well Name: MW0036

Depth To Bottom:
(Initial) ~31.0
(Final) 31.0

Static Water Level:
(Initial) 4.25
(Final) 4.25

Field Cleaning of Equip: WL meter, new tubing
Measuring Point: TOC (~1.3 AGS)
Casing I.D.: 1"

Project Number: FR13526
Date Installed: 11/22/16
Date Developed: 11/22/16 ~~Prod~~ prior to grout.

Pump Type: Cent. pump
(Capacity) >1 gpm

Well Volume: 1.27 gal

Geosyntec Representative: D. Sizemore
Drilling Firm Representative: Brian N.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	~~Comments~~ DO
814	4.5	6.63	25.09	.521	>1000	.25	-35.3	~~DO~~ ms
819	7.0	6.42	26.55	.491	>1000	.23	-59.6	1.23
826	10.0	6.49	26.57	.500	697	.23	-60.9	1.19
830	11.0	6.48	26.71	.502	472	.25	-62.0	1.21

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WELL DEVELOPMENT DATA FORM

Site Name: LC398
Well Name: MW0037

Depth To Bottom:
(Initial) ~38.0
(Final) ~38.0

Static Water Level:
(Initial) 5.10
(Final) 5.10

Field Cleaning of Equip: WL meter, new tubing
Measuring Point: TOC (~1.75' AGS)
Casing I.D.: 1"

Project Number: FR1352E
Date Installed: 11/22/16
Date Developed: 11/22/16 Prior to grout

Pump Type: Cent. pump
(Capacity) >1 gpm

Well Volume: 1.56 gal

Geosyntec Representative: D. Sizemore
Drilling Firm Representative: Brian N.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments DO
9:57	START							
10:01	3	7.31	25.83	1.115	693	.55	-26.5	1.18
10:04	6	7.30	25.71	1.114	598	.55	-24.3	1.32
10:10	10	7.29	25.69	1.14	473	.55	-24.0	1.30

DMS

Geosyntec consultants

WELL DEVELOPMENT DATA FORM

Site Name: CC39B
Well Name: MW 028

Depth To Bottom:
(Initial) 48.50
(Final) 48.50

Static Water Level:
(Initial) 5.97
(Final) 5.97

Field Cleaning of Equip: WLMater, new tubing
Measuring Point: TOC (~2.3' AGS)
Casing I.D.: 1"

Project Number: FR1352E
Date Installed: 11/22/16
Date Developed: 11/22/16

Pump Type: Centr. pump
(Capacity) >1.

Well Volume: 1.88 gal

Geosyntec Representative: D. Sizemore
Drilling Firm Representative: Brian N.
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments DO
11:55	START							→
12:03	4.0	7.59	26.97	1.041	479	0.51	-23.8	1.77
12:07	6.5	7.60	26.95	1.038	395	.51	-22.8	1.53
12:11	10	7.61	27.60	1.041	621	.52	-22.5	1.49

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WELL DEVELOPMENT DATA FORM

Site Name: CC39B
Well Name: MW39

Depth To Bottom:
(Initial) ~~17.0~~ 17.0
(Final) 17.0

Static Water Level:
(Initial) 2.95
(Final) 2.95

Field Cleaning of Equip: WL meter
Measuring Point: TOC (~.75' AGS)
Casing I.D.: 1"

Project Number: [illegible]
Date Installed: 11/22/16
Date Developed: 11/22/16

Pump Type:
(Capacity) > 1 gpm

Well Volume: 1.24 gal

Geosyntec Representative: D. Seymore
Drilling Firm Representative: D. Seymore
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	Comments DO
~~17:26~~	6TG							
17:36	7	6.71	25.42	14.60	300	8.47	-44.5	0.48
17:38	9	6.70	25.49	14.61	291	8.50	-50.1	0.39
17:45	13	6.78	25.23	14.79	409	8.50	51.0	0.40

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WELL DEVELOPMENT DATA FORM

Site Name: LC3GR
Well Name: MW0040

Depth To Bottom:
(Initial) 17.0 22.0 mbs
(Final) 17.0 22.0

Static Water Level:
(Initial) 3.20
(Final) 3.95

Field Cleaning of Equip: WL meter, new tubing
Measuring Point: TOC (~0.8' AGS)
Casing I.D.: 1"

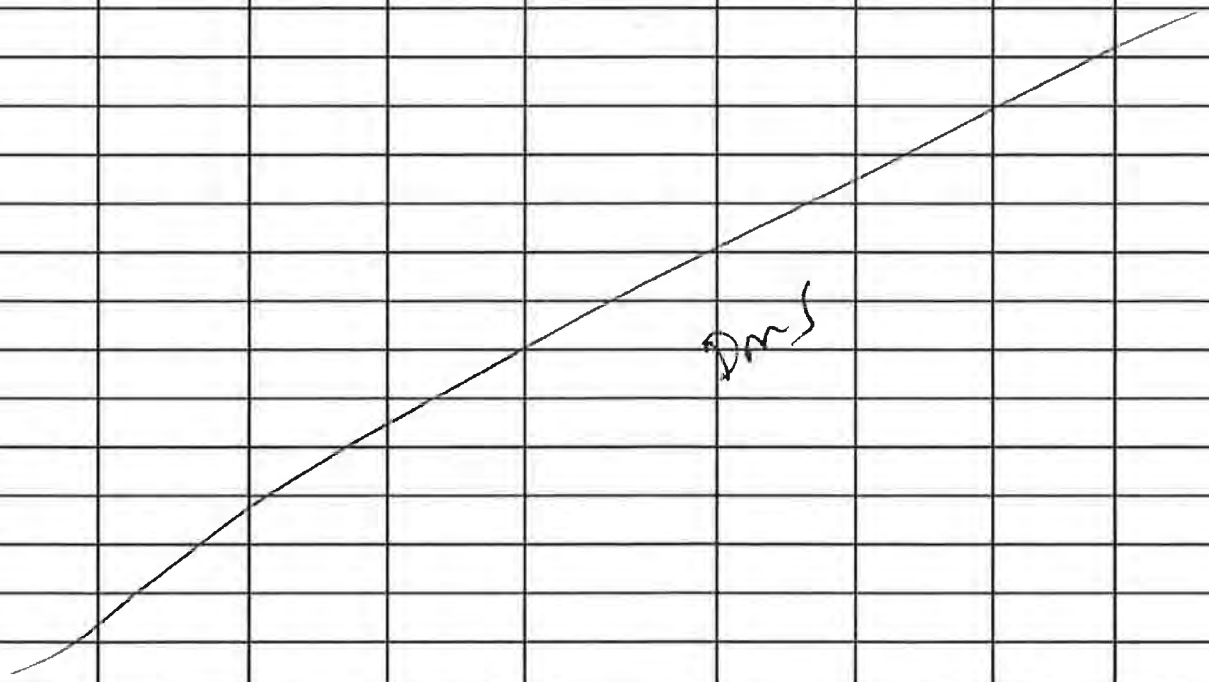
Project Number: FR1352E
Date Installed: 11/23/16
Date Developed: 11/23/16

Pump Type: Cent. pump
(Capacity) >1 gpm

Well Volume: 0.90 gal

Geosyntec Representative: D. Sizemore
Drilling Firm Representative: Geosyntec
Purge Water Containment: Drum

Time	Volume Removed (gal)	pH (SU)	Temp (°C)	Conductance (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	~~Comments~~ DO
8:01	Start							
8:08	2.5	6.67	24.41	4.972	>1000	2.66	-46.1	1.20
8:11	3.5	6.62	24.35	4.997	>1000	2.68	-50.5	.63
8:15	5.5	6.65	24.30	5.002	795	2.70	-50.8	.69



NOVEMBER THROUGH DECEMBER 2016
BASELINE MONITORING WELL SAMPLING

FIELD FORMS

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B
Project No.: FR1352E/16
Contractors: None

Date: 11-28-16
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells: X
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 0900 @ TVL, begin Brief for LC39B (Site) MW sampling
- 1030 - Mob to Site
- 1100 - Arrive @ Site and Sign in @ Pad Leader Office. ~~Begin~~ Meet Geoview Surveyors (Nesbitt & Dale) and conduct tailgate safety meeting. Discuss Site Closeness and plan for rest of week. Then begin MW sampling activities. See MW logs for more info.
- 1540 - Finished sampling for the day. Sign out @ Pad leader office. Finished sampling 9 wells for the day. See MW logs for more info. Offsite.

Plans/Future Activities

11-28-16
Signature/Date

consulta

DAILY FIELD REPORT

Project: LC39B
Project No.: FR1352E/16
Contractors: none

Date: 11-29-16
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells: 10
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 0800- Ben Cappenger (BC) & David Warfel (DW) (Geosyntec) @ TVL office. Begin prep for MW sampling @ LC39B (Site).
- 0930- Mob to Kennedy Space Center. Go to drop off equipment @ Site, then go to pickup Sp.11 pallet for IDW mgmt
- 1000- Arrive @ Site, Sign in @ Pad Leader Office. Unload equipment to make room for Sp.11 pallet in truck, then mob to Sp11 pallet staging area to pick up Sp.11 pallet
- 1200- Sp.11 pallet picked up, all equipment ready. Break for lunch
- 1250- Resume MW sampling activities - See MW logs for more info.
- 1700- Finished sampling activities for the day, off-site

Plans/Future Activities

11-29-16
Signature/Date

consulta

DAILY FIELD REPORT

Project: LC39B
Project No.: FR1352E
Contractors: None

Date: 11-30-16
Task No.:

Work Performed

Well Installation:		Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	X
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

- 0800 - David Warfel & Ben Coppenger (Geosyntec) @ TVL office. Prep for MW sampling activities.
- 0930 - mob to Site.
- 1000 - Arrive @ Site. Check in @ Pad Leader Office. Begin MW sampling activities. See MW logs for more details.

1245 - 1320 - Break for lunch

- 1330 - Resume sampling activities.
- 1700 - Finished sampling for the day, off Site.

Plans/Future Activities

Ben Coppenger 11-30-16
Signature/Date

consulta

DAILY FIELD REPORT

Project: LC39B
Project No.: FR1352E
Contractors: None

Date: 12-1-16
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells: D
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 0645 - Arrive @ LC39B (S.K.). Beg Check in @ Pad Leader's office. Begin MW sampling activities.
- 0900 - David Wastel (Geosyntec) arrives on S.K. He begins MW sampling activities. See MW Sampling logs for more details.
- 1000 - Ben Coppenger finished w/ sampling inside 39B fence, David Wastel still sampling inside fence. Ben C. begins IDW mgmt. See IDW Log for more info
- 1130 - Finished IDW mgmt for now and mob w/ David Wastel to area outside 39B fence to complete sampling activities.
- 1230 - Finished sampling activities - transfer IDW to IDW drums in IDW storage area inside Pad B. Cleanup IDW area & secure IDW drums & pallets.
- 1330 - Leave site & check out of Pad Leader office.

Plans/Future Activities

Ben Cop 12-1-16
Signature/Date

Geosyntec consultants

Water Quality Instrument Calibration Form

Project/Site: LC39B Project #: FR1352E Field Personnel: Ben Coppenger

Water Quality Meter - Model/Serial#: YSI 556 MPS 09F101281 Turbidimeter - Model/Serial#: HACH 2100 Q 15060C041693

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria:+/-0.3 mg/L		
CAL ICV CCV	11-28-16	1025 20.99	20.99	8.915	8.73 / 8.915	98/100	P F
CAL ICV CCV	11-28-16	1835	23.16	8.546	8.32	98	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes (No)					Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-28-16	0939	6GJ217	10-17	1.0	1.039/1.0	P F
CAL ICV CCV	11-28-16	1822	6GJ217	10-17	1.0	1.030	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
CAL ICV CCV	11-28-16	0919	6GJ218	10-18	7.0	7.10/7.0	P F
CAL ICV CCV		0923	6GJ216	10-18	4.0	4.07/4.0	P F
CAL ICV CCV		0937	6GH456	8-18	10.0	9.8/10.0	P F
CAL ICV CCV		1815			7.0	7.07	P F
CAL ICV CCV		1818	SAME		4.0	4.08	P F
CAL ICV CCV		1821			10.0	9.87	P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes (No)					Geosyntec Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-28-16	0950	6GJ219	7-17	200@25	201.2/200	P F
CAL ICV CCV	11-28-16	1825	6GJ219	7-17	200@25	201.4	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
CAL ICV CCV	11-28-16	10	10.9/10	P F
CAL ICV CCV	11-28-16	10	10.7	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
CAL ICV CCV	11-28-16	20	20.6/20	P F
CAL ICV CCV	11-28-16	20	20.3	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
CAL ICV CCV	11-28-16	100	104/100	P F
CAL ICV CCV	11-28-16	100	104	P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-28-16	800	825/800	P F
CAL ICV CCV	11-28-16	800	817	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration
ICV = Initial Calibration Verification
CCV = Continuing Calibration Verification
* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration
Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)
Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if neede
If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec consultants

Water Quality Instrument Calibration Form

Project/Site: LC 39B Project #: FR1352E Field Personnel: Dan Coppenger

Water Quality Meter - Model/Serial#: YSI 556 MPS 09F101281 Turbidimeter - Model/Serial#: Hach 2100Q 150600C04693

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria:+/-0.3 mg/L		
CAL ICV CCV	11-29-16	0841	20.88	8.932	8.53 / 8.93	95.6/100	P F
CAL ICV CCV	11-29-16	1830	22.97	8.578	8.409	99	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes No					Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-29-16	0829	6GJ217	10-17	1.0	1.030/1.0	P F
CAL ICV CCV	11-29-16	1818	6GJ217	10-17	1.0	1.036	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
CAL ICV CCV	11-29-16	0816	6GJ218	10-18	7.0	6.88/7.0	P F
CAL ICV CCV		0820	6GJ216	10-18	4.0	4.0/4.0	P F
CAL ICV CCV		0825	BGH456	8-18	10.0	9.91/10	P F
CAL ICV CCV		1810			7.0	6.83	P F
CAL ICV CCV		1813	SAME		4.0	3.97	P F
CAL ICV CCV		1816			10.0	9.87	P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes No					Geosyntec Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-29-16	0833	6GJ219	7-17	200 @25	203.7/200	P F
CAL ICV CCV	11-29-16	1825	6GJ209	7-17	200 @25	201	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
CAL ICV CCV	11-29-16	10	10.5/10	P F
CAL ICV CCV	11-29-16	10	10.3	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
CAL ICV CCV	11-29-16	20	20.1/20	P F
CAL ICV CCV	11-29-16	20	19.93	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
CAL ICV CCV	11-29-16	100	99.4/100	P F
CAL ICV CCV	11-29-16	100	99.8	P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-29-16	800	802/800	P F
CAL ICV CCV	11-29-16	800	805	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration

ICV = Initial Calibration Verification

CCV = Continuing Calibration Verification

* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if neede

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec consultants

Water Quality Instrument Calibration Form

Project/Site: LC 39 B Project #: FR1352E Field Personnel: David Warfel

Water Quality Meter - Model/Serial#: YSI 556 MPS / 15D100993 Turbidimeter - Model/Serial#: 15060C04 1572

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
			24.1 (DW)	8.403	Acceptance Criteria: +/-0.3 mg/L		
(CAL) (ICV) CCV	11-29-16	8:45 AM	~~23.27~~ (DW)	~~8.534~~ (DW)	6.87/8.40	81.9/100.1	P (F)
CAL ICV (CCV)	11-29-16	1855	23.22	8.546 (DW)	8.319	98	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes (No)					Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV	11-29-16	8:36 AM	GGH453	AUG-17	1.0	1.15/1.0	P (F)
CAL ICV (CCV)	11-29-16	1843	GGH453	8-17	1.0	1.041	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
(CAL) (ICV) CCV	11-29-16	8:05 AM	6GH454	AUG-18	7.0	6.89/7.0	(P) F
(CAL) (ICV) CCV	11-29-16	8:07 AM	~~6GH454~~	AUG-18	4.0	4.11/4.0	(P) F
(CAL) (ICV) CCV	11-29-16	8:09 AM	GGC1061	MAR-18	10.0	10.07/10.0	(P) F
CAL ICV (CCV)	11-29-16	1837	6GH452		7.0	6.95	(P) F
CAL ICV (CCV)	↓	1839	(DW)	AME	4.0	4.07	(P) F
CAL ICV (CCV)	↓	1841			10.0	10.02	(P) F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes (No)					Geosyntec Acceptance Criteria: +/- 5%		
(CAL) ICV CCV	11-29-16	8:40 AM	6GH449	FEB-17	~~178.3~~ 200	178.3/200	(P) F
CAL ICV (CCV)	11-29-16	1848	GGC449	2-17	200 @ 25 @ 25°C	193	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity ~~0.1-40~~ 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
(CAL) (ICV) CCV	11-29-16	20	20.9/20	(P) F
CAL ICV (CCV)	↓	20	20.3	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity ~~11-40 NTU~~ 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
(CAL) (ICV) CCV	11-29-16	10	9.98/10	(P) F
CAL ICV (CCV)	11-29-16	10	9.97	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
(CAL) (ICV) CCV	11-29-16	100	102/100	(P) F
CAL ICV (CCV)	11-29-16	100	99.3	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
(CAL) (ICV) CCV	11-29-16	800	787/800	(P) F
CAL ICV (CCV)	11-29-16	800	791	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration

ICV = Initial Calibration Verification

CCV = Continuing Calibration Verification

* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if neede

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec consultants

Water Quality Instrument Calibration Form

Project/Site: LC39B Project #: FR1352E Field Personnel: Ben Coppenger

Water Quality Meter - Model/Serial#: YSI 556 MPS 09F101281 Turbidimeter - Model/Serial#: HACH 2100Q 15060C041693

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria:+/-0.3 mg/L		
CAL ICV CCV	11-30-16	1006	25.40	8.203	8.01/8.203	98/100	P F
CAL ICV CCV	12-1-16	0728	23.88	8.434	8.351/8.434	98/100	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes No					Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-30-16	0953	6GJ217	10-17	1.0	1.013/1.0	P F
CAL ICV CCV	12-1-16	0721	6GJ217	10-17	1.0	1.031/1.0	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
CAL ICV CCV	11-30-16	0942	6GJ218	10-18	7.0	6.90/7.0	P F
CAL ICV CCV		0945	6GJ216	10-18	4.0	4.07/4.0	P F
CAL ICV CCV		0949	BGH456	8-18	10.0	10.0/10.0	P F
CAL ICV CCV	12-1-16	0712	SAME		7.0	7.11/7.0	P F
CAL ICV CCV	12-1-16	0715			4.0	4.02/4.0	P F
CAL ICV CCV	12-1-16	0720			10.0	9.88/10	P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes No					Geosyntec Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-30-16	1000	6GJ219	7-17	200@25	190/200	P F
CAL ICV CCV	12-1-16	0723	6GJ219	7-17	200@25	202/200	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
CAL ICV CCV	11-30-16	10	10.9/10.0	P F
CAL ICV CCV	12-1-16	10	10.9/10	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
CAL ICV CCV	11-30-16	20	19.9/20	P F
CAL ICV CCV	12-1-16	20	20.8/20	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
CAL ICV CCV	11-30-16	100	101/100	P F
CAL ICV CCV	12-1-16	100	102/100	P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-30-16	800	803/800	P F
CAL ICV CCV	12-1-16	800	816/800	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration

ICV = Initial Calibration Verification

CCV = Continuing Calibration Verification

* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if neede

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec consultants

Water Quality Instrument Calibration Form

Project/Site: LC393 Project #: FR1352E/16 Field Personnel: David Warfel & Ben Coppenger

Water Quality Meter - Model/Serial#: YSI 556 MPS 15D100993 Turbidimeter - Model/Serial#: HACH 2100Q 15060C04 1572

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria:+/-0.3 mg/L		
CAL ICV CCV	11-30-16	1004	26.30	8.07	7.87/8.07	98/100	P F
CAL ICV CCV	12-1-16	0932	25.7	8.16	8.20/8.16	101/100	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes No					Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-30-16	0951	6GH453	8-17	1.0	1.05/1.0	P F
CAL ICV CCV	12-1-16	0930	6GH453	8-17	1.0	1.027/1.0	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
CAL ICV CCV	11-30-16	0928	6GH454	8-18	7.0	7.08/7.0	P F
CAL ICV CCV	"	0934	6GH452	8-18	4.0	4.08/4.0	P F
CAL ICV CCV	"	0940	6GG06	3-18	10.0	9.92/10	P F
CAL ICV CCV	12-1-16	0904			7.0	7.08/7.0	P F
CAL ICV CCV	"	0910	SAME		4.0	4.18/4.0	P F
CAL ICV CCV	"	0917			10.0	9.86/10	P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes No					Geosyntec Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-30-16	0958	6GE449	2-17	200@25	200.2/200	P F
CAL ICV CCV	12-01-16	0926	6GE447	2-17	200@25	193.6/200	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
CAL ICV CCV	11-30-16	10	10.9/10	P F
CAL ICV CCV	12-1-16	10	10.6/10	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
CAL ICV CCV	11-30-16	20	19.9/20	P F
CAL ICV CCV	12-1-16	20	20/20	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
CAL ICV CCV	11-30-16	100	101/100	P F
CAL ICV CCV	12-1-16	100	99.7/100	P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
CAL ICV CCV	11-30-16	800	803/800	P F
CAL ICV CCV	12-1-16	800	801/800	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration

ICV = Initial Calibration Verification

CCV = Continuing Calibration Verification

* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if neede

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec consultants

Water Quality Instrument Calibration Form

Project/Site: LC39B Project #: FR1352E/16 Field Personnel: Ben Capperos

Water Quality Meter - Model/Serial#: YSI 556 MPS 09F10128 Turbidimeter - Model/Serial#: HACH 2100Q 15060C04 1693

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria:+/-0.3 mg/L		
(CAL) (ICV) CCV	12-1-16	0728	23.88	8.434	8.351/8.434	98/100	(P) F
CAL ICV (CCV)	12-1-16	1630	25.19	8.233	8.496	102	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes No					Acceptance Criteria: +/- 5%		
(CAL) ICV CCV	12-1-16	0721	6GJ217	10-17	1.0	1.031/1.0	(P) F
CAL ICV (CCV)	12-1-16	1616	6GJ217	10-17	1.0	1.016	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
(CAL) ICV CCV	12-1-16	0712	6GJ218	10-18	7.0	7.11/7.0	(P) F
(CAL) ICV CCV	"	0715	6GJ216	10-18	4.0	4.02/4.0	(P) F
(CAL) (CCV) CCV		0720	8GH456	8-18	10.0	9.88/10	(P) F
CAL ICV (CCV)		1608			7.0	7.05	(P) F
CAL ICV (CCV)		1610	SAME		4.0	4.07	(P) F
CAL ICV (CCV)		1614			10.0	9.93	(P) F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes No					Geosyntec Acceptance Criteria: +/- 5%		
(CAL) ICV CCV	12-1-16	0723	6GJ219	7-17	200@25	202/200	(P) F
CAL ICV (CCV)	12-1-16	1622	6GJ219	7-17	200@25	197	(P) F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
(CAL) (ICV) CCV	12-1-16	10	10.9/10	(P) F
CAL ICV (CCV)	12-1-16	10	10.8	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
(CAL) ICV CCV	12-1-16	20	20.8/20	(P) F
CAL ICV (CCV)	12-1-16	20	20.8	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
(CAL) (ICV) CCV	12-1-16	100	102/100	(P) F
CAL ICV (CCV)	12-1-16	100	101	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
(CAL) ICV CCV	12-1-16	800	816/800	(P) F
CAL ICV (CCV)	12-1-16	800	810	(P) F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration

ICV = Initial Calibration Verification

CCV = Continuing Calibration Verification

* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration

Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)

Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if neede

If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Geosyntec consultants

Water Quality Instrument Calibration Form

Project/Site: LC39B Project #: FR1352E Field Personnel: David Wentzel + Ben Carpenter

Water Quality Meter - Model/Serial#: YSI 556 MPS 15D100993 Turbidimeter - Model/Serial#: HACH 2100Q 15060C04 ~~1693~~ 1572

Dissolved Oxygen (FDEP SOP FT 1500)	Date	Time	Temp (°C)	Saturation (mg/L)*	Reading (mg/L)	Reading (%)	Pass or Fail
					Acceptance Criteria:+/-0.3 mg/L		
CAL ICV CCV	12-1-16	0932	25.7	8.16	8.20/8.16	101/100	P F
CAL ICV CCV	12-1-16	1530	25.6	8.173	~~8.395~~ 8.345	102	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Specific Conductance (FDEP SOP FT 1200)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mS/cm)	Reading (mS/cm)	Pass or Fail
Specific Conductance Probe Cleaned? Yes No					Acceptance Criteria: +/- 5%		
CAL ICV CCV	12-1-16	0930	66H453	8-17	1.0	1.027/1.0	P F
CAL ICV CCV	12-1-16	1528	66H453	8-17	1.0	1.041	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

pH (FDEP SOP FT 1100)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (SU)	Reading (SU)	Pass or Fail
					Acceptance Criteria: +/- 0.2 SU		
CAL ICV CCV	12-1-16	0904	66H454	8-18	7.0	7.08/7.0	P F
CAL ICV CCV		0910	66H452	8-18	4.0	4.18/4.0	P F
CAL ICV CCV		0917	66C061	3-18	10.0	9.86/10	P F
CAL ICV CCV		1507			7.0	6.88	P F
CAL ICV CCV		1508	SAME		4.0	4.0	P F
CAL ICV CCV		1515			10.0	10.0	P F

ORP (FDEP SOP N/A)	Date	Time	Standard Lot #	Standard Exp. Date	Standard (mV @ Temp °C)	Reading (mV)	Pass or Fail
Dissolved Oxygen Membrane Changed? Yes No					Geosyntec Acceptance Criteria: +/- 5%		
CAL ICV CCV	12-1-16	0926	6GE449	2-17	200@25	193.6/200	P F
CAL ICV CCV	12-1-16	1522	6GE449	2-17	200@25	197.4	P F
CAL ICV CCV							P F
CAL ICV CCV							P F

Turbidity 0.1-10 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 10%		
CAL ICV CCV	12-1-16	10	10.6/10	P F
CAL ICV CCV	12-1-16	10	10.3	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 11-40 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 8%		
CAL ICV CCV	12-1-16	20	20/20	P F
CAL ICV CCV	12-1-16	20	19.7	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity 41-100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 6.5%		
CAL ICV CCV	12-1-16	100	99.7/100	P F
CAL ICV CCV	12-1-16	100	99.5	P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Turbidity >100 NTU	Date	Standard (NTU)	Reading (NTU)	Pass or Fail
		Acceptance Criteria: +/- 5%		
CAL ICV CCV	12-1-16	800	801/800	P F
CAL ICV CCV	12-1-16	800	797	P F
CAL ICV CCV				P F
CAL ICV CCV				P F

Notes:

CAL = Initial Calibration
ICV = Initial Calibration Verification
CCV = Continuing Calibration Verification
* See Table FS 2200-2 on the back of this form

Allow adequate time for the dissolved oxygen sensor to equilibrate during air calibration
Calibrate specific conductance using at least two standards that bracket the range of expected sample readings (unless readings <0.1 mS/cm is acceptable)
Calibrate pH using at least two standards (typ. pH 4 and 7) that bracket the range of expected sample readings; always start with pH 7; add a third calibration point if neede
If parameter fails to calibrate within SOP acceptance criteria then append sample results with a "J" qualifier

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 12-1-16 Sampled By: Ben Coppenger

Station (Well ID): IW0004I Purge Method: Pump ✓ Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) ✓ Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 0809 Time @ End of Purging: 0823 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 44.0 ft BTOC

Depth to Water: 3.30 ft BTOC Total Well Depth: 46.5 ft BLS Screen Interval: 41.5-46.5 ft BLS Well diameter: 2 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
0809	Start	22.81	8.50	0.358	7.87	0.18	-19.9	2.17	0.393	Clear	
0819	1.0	22.85	7.60	1.628	8.54	0.82	-58.9	1.09	1.059	Clear	
0821	1.2	22.85	7.60	1.629	7.63	0.82	-60.1	1.09	1.059	Clear	
0823	1.4	22.85	7.60	1.630	5.97	0.82	-61.4	1.08	1.060	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 50 ft) + (Flow Through Cell Volume 0.20 gal) = 0.33 gallons [3 × Equip. Vol = 0.99 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: ~~LC39B~~ Time Collected: 0823 Comments: VOC 8260 B

ECS-IW0004I-044.0-20161201

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 12-1-16 Sampled By: Ben Coppenger

Station (Well ID): IW0005I Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geo pump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 0736 Time @ End of Purging: 0756 Total Purging Time: 20 min. Depth of Pump or Intake Tubing: 44.5 ft BTOC

Depth to Water: 3.55 ft BTOC Total Well Depth: 47 ft BLS Screen Interval: 42-47 ft BLS Well diameter: 2 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
0736	Start	22.88	9.20	0.337	34.4	0.16	98.1	1.80	0.250	Yellow	
0747	1.1	22.74	7.54	1.596	25.8	0.80	23.2	1.38	1.044	Clear	
0752	1.6	22.76	7.65	1.778	12.7	0.90	-20.6	1.06	1.162	Clear	
0754	1.8	22.76	7.65	1.779	17.3	0.91	-27.8	1.03	1.164	Clear	
0756	2.0	22.76	7.65	1.779	13.5	0.91	-32.7	1.01	1.163	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.20 gal) = 0.34 gallons [3 × Equip. Vol = 1.02 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: ~~LC39B~~ ECS-IW0005I-044.5-20161201 Time Collected: 0756 Comments: VOC 8260

Revision Date – Jan 2015

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 12-1-16 Sampled By: Ben Coppenger

Station (Well ID): IW0006I Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X ___ Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 0842 Time @ End of Purging: 0856 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 35.0 ft BTOC

Depth to Water: 3.31 ft BTOC Total Well Depth: 37.5 ft BLS Screen Interval: 32.5-37.5 ft BLS Well diameter: 2 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
0842	Start	22.90	8.32	0.590	19.9	0.28	-24.8	3.16	0.376	Clear	
0852	1.0	22.73	7.04	1.449	15.6	0.73	-160.3	0.96	0.947	Clear	
0854	1.2	22.72	7.06	1.463	12.8	0.74	-163.0	0.95	0.954	Clear	
0856	1.4	22.72	7.08	1.474	10.9	0.74	-165.8	0.96	0.962	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 45 ft) + (Flow Through Cell Volume 0.20 gal) = 0.32 gallons [3 × Equip. Vol = 0.96 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: ECS-IW0006I-035.0-20161201 Time Collected: 0856 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FA1352E Phase: 16 Date: 12-1-16 Sampled By: Ben Copperger

Station (Well ID): IW0008I Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 0916 Time @ End of Purging: 0931 Total Purging Time: 15 min. Depth of Pump or Intake Tubing: 44.5 ft BTOC

Depth to Water: 2.20 ft BTOC Total Well Depth: 47 ft BLS Screen Interval: 42-47 ft BLS Well diameter: 2 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
0916	Start	23.98	7.57	2.085	5.03	1.15	10.0	3.24	2.001	Clear	
0927	1.1	22.90	7.55	7.722	4.30	4.27	-23.5	0.76	5.021	Clear	
0929	1.3	22.90	7.56	7.727	6.17	4.28	-25.6	0.77	5.025	Clear	
0931	1.5	22.90	7.56	7.733	7.11	4.28	-27.4	0.78	5.028	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.20 gal) = 0.34 gallons [3 × Equip. Vol = 1.02 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: ECS-IW0008I-044.5-20161201 Time Collected: 0931 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: F-R1352E Phase: 16 Date: 11-28-16 Sampled By: Ben Coppenger

Station (Well ID): MW0010 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1314 Time @ End of Purging: 1328 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 27 ft BTOC

Depth to Water: 4.12 ft BTOC Total Well Depth: 32 ft BLS Screen Interval: 22-32 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) x Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1314	Start	25.05	9.02	1.360	158	0.68	-134.4	1.39	0.894	Grey	
1324	1.0	23.96	6.49	1.308	16.0	0.65	-268.6	0.31	0.851	Clear	
1326	1.2	23.96	6.48	1.308	15.5	0.65	-271.6	0.31	0.850	Clear	
1328	1.4	23.96	6.47	1.307	16.8	0.65	-274.7	0.29	0.850	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 40 ft) + (Flow Through Cell Volume 0.20 gal) = 0.30 gallons [3 × Equip. Vol = 0.90 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0010-027.0-20161128 Time Collected: 1328 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352F Phase: 16 Date: 11-28-16 Sampled By: Ben Coppenger

Station (Well ID): MW0011 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1251 Time @ End of Purging: 1306 Total Purging Time: 15 min. Depth of Pump or Intake Tubing: 45 ft BTOC

Depth to Water: 4.88 ft BTOC Total Well Depth: 50 ft BLS Screen Interval: 40-50 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1251	Start	25.80	7.61	0.835	531	0.43	-69.3	2.59	0.638	Grey	
1302	1.1	24.25	6.83	1.299	17.8	0.65	-204.0	0.38	0.844	Clear	
1304	1.3	24.21	6.83	1.299	16.7	0.65	-205.0	0.36	0.844	Clear	
1306	1.5	24.18	6.83	1.299	16.1	0.65	-207.9	0.36	0.844	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.20 gal) = 0.34 gallons [3 × Equip. Vol = 1.02 gal]

[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0011-045.0-20161128 Time Collected: 1306 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-28-16 Sampled By: Ben Coppenger

Station (Well ID): MW0012 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: solinst

Time @ Start of Purging: 1226 Time @ End of Purging: 1241 Total Purging Time: 15 min. Depth of Pump or Intake Tubing: 45 ft BTOC

Depth to Water: 4.70 ft BTOC Total Well Depth: 50 ft BLS Screen Interval: 40-50 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1226	Start	24.53	8.20	1.062	out of range	0.53	-128.6	0.87	0.724	Brown	
1237	1.1	23.86	6.96	1.125	19.8	0.56	-198.4	0.43	0.731	Clear	
1239	1.3	23.85	6.95	1.124	19.2	0.43	-202.0	0.40	0.731	Clear	
1241	1.5	23.88	6.94	1.125	18.7	0.41	-204.1	0.40	0.731	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.20 gal) = 0.34 gallons [3 × Equip. Vol = 1.02 gal]
[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW0012-045.0-20161128 Time Collected: 1241 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-28-16 Sampled By: Ben Coppenger

Station (Well ID): MW0013 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1132 Time @ End of Purging: 1152 Total Purging Time: 20 min. Depth of Pump or Intake Tubing: 21 ft BTOC

Depth to Water: 7.10 ft BTOC Total Well Depth: 26 ft BLS Screen Interval: 16-26 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1132	Start	25.30	6.70	2.120	140.0	1.09	−16.3	3.02	1.425	Brown	
1141	0.9	25.36	5.97	1.889	85.4	0.96	−178.9	0.62	1.225	Brown	
1148	1.6	25.27	5.98	1.830	19.3	0.92	−238.9	0.36	1.186	Clear	
1150	1.8	25.29	5.99	1.821	18.6	0.92	−241.7	0.33	1.186	Clear	
1152	2.0	25.26	5.99	1.823	19.0	0.92	−242.8	0.32	1.181	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 30 ft) + (Flow Through Cell Volume 0.20 gal) = ~~0.5~~ 0.28 gallons [3 × Equip. Vol = ~~0.9~~ 0.84 gal]
[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID LC39B-MW0013-021.0-20161128 Time Collected: 1152 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC 39B Project No.: FR1352E Phase: 16 Date: 11-29-16 Sampled By: David Warfel

Station (Well ID): MW0014 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 14:17 Time @ End of Purging: 14:31 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 21 ft BTOC

Depth to Water: 5.15 ft BTOC Total Well Depth: 26 ft BLS Screen Interval: 16-26 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
14:17	Start	26.23	6.22	1.165	Out of range	0.58	-42.4	0.91	0.758	brown	
14:27	.0	25.76	5.68	1.136	209.0	0.56	-61.0	0.45	0.741	brown	
14:29	.2	25.80	5.73	1.133	204.0	0.56	-73.0	0.36	0.737	brown	
14:31	.4	25.79	5.74	1.138	205.0	0.56	-76.8	0.35	0.739	brown	

~~See FS 2200 2.4 SOPs~~

FS 2212 3.5 for turbidity allowance

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. ~~If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.~~ ~~See FS 2200 2.4 SOPs~~ FS 2212 3.5 0.84

Equipment Volume = (Tubing Capacity ~~0.0026~~ gal/ft × Tubing Length 30 ft) + (Flow Through Cell Volume 0.2 gal) = ~~0.28~~ 0.28 gallons [3 × Equip. Vol = ~~0.84~~ gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0014-021.0-20161129 Time Collected: 14:31 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: (DW) FR-13352E Phase: 16 Date: 11-29-16 Sampled By: David Warfel

Station (Well ID): MW0015 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 13:36 Time @ End of Purging: 13:50 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 31 ft BTOC

Depth to Water: 5.15 ft BTOC Total Well Depth: 36 ft BLS Screen Interval: 26-36 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
13:36	Start	26.00	6.94	1.024	55.6	0.50	-26.0	2.32	0.652	yellow	
13:46	1.0	25.39	6.36	1.012	8.41	0.50	-53.1	0.37	0.657	clear	
13:48	1.2	25.34	6.35	1.013	5.16	0.50	-56.1	0.32	0.658	clear	
13:50	1.4	25.32	6.36	1.012	4.71	0.50	-57.4	0.31	0.658	clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 40 ft) + (Flow Through Cell Volume 0.20 gal) = 0.3 gallons [3 × Equip. Vol = 0.9 gal]
[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW0015-031.0-20161129 Time Collected: 13:50 Comments: VOCs Method 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-29-16 Sampled By: Ben Coppenger

Station (Well ID): MW0016 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geop Pump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1456 Time @ End of Purging: 1520 Total Purging Time: 24 min. Depth of Pump or Intake Tubing: 25 ft BTOC

Depth to Water: 3.59 ft BTOC Total Well Depth: 30 ft BLS Screen Interval: 20-30 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1456	Start	24.32	6.61	1.304	287	0.65	-38.6	2.67	0.846	Brown	
1506	1.0	23.80	5.72	1.263	263	0.63	-140.7	0.48	0.819	Brown	
1508	1.2	23.80	5.71	1.259	230	0.63	-144.8	0.43	0.819	Brown	
1516	2.0	23.93	5.83	1.218	135	0.61	-211.7	0.25	0.792	Brown	
1518	2.2	23.93	5.84	1.217	137	0.60	-215.5	0.25	0.790	~~Brn~~ Brown	
1520	2.4	23.92	5.84	1.213	138	0.60	-219.9	0.25	0.789	Brown	

~~See FS 2200~~ 2.4 SOPS

FS 2212 3.5 for turbidity allowance

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater. ~~See FS 2200 2.4 SOPS~~

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 35 ft) + (Flow Through Cell Volume 0.20 ~~0.33~~ 0.29 gal ~~0.87~~ gallons [3 × Equip. Vol = ~~0.87~~ 0.87 gal]

[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0016-025.0-20161129 Time Collected: 1520 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC 39B Project No.: FR 1352E Phase: 16 Date: 11-29-16 Sampled By: David Warfel

Station (Well ID): MW 0017 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) ___ Peristaltic X Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 15:08 Time @ End of Purging: 15:22 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 35 ft BTOC

Depth to Water: 3.6 ft BTOC Total Well Depth: 40 ft BLS Screen Interval: 30-40 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
15:08	Start	25.77	6.29	1.123	36.6	0.55	-26.0	1.67	0.730	light yellow	
15:18	1.0	25.52	6.48	1.180	11.3	0.58	-57.0	0.84	0.769	clear	
15:20	1.2	25.51	6.57	1.195	10.3	0.59	-60.3	0.80	0.778	clear	
15:22	1.4	25.48	6.61	1.199	8.7	0.59	-60.4	0.79	0.780	clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 45 ft) + (Flow Through Cell Volume 0.2 gal) = 0.32 gallons [3 × Equip. Vol = 0.96 gal]
[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW0017-0352O-20161129 Time Collected: 15:22 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-29-16 Sampled By: Ben Coffenger

Station (Well ID): MW0018 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1548 Time @ End of Purging: 1612 Total Purging Time: 24 min. Depth of Pump or Intake Tubing: 25 ft BTOC

Depth to Water: 3.02 ft BTOC Total Well Depth: 30 ft BLS Screen Interval: 20-30 ft BLS Well diameter: 1 in Well Volume: _____ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1548	Start	24.72	6.44	0.814	333	0.40	-57.4	1.33	0.528	Brown	
1558	1.0	23.69	6.01	0.863	228	0.42	-173.3	0.41	0.557	Brown	
1608	2.0	23.66	6.07	0.859	206	0.42	-182.0	0.35	0.558	Brown	
1610	2.2	23.64	6.07	0.859	210	0.42	-184.0	0.35	0.559	Brown	
1612	2.4	23.64	6.07	0.860	209	0.42	-185.6	0.36	0.559	Brown	

~~See FS 2200 2.4 SOPs~~

FS 2212 3a5 for turbidity allowance

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

~~See FS 2200 2.4 SOPs~~ 0.87

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 35 ft) + (Flow Through Cell Volume 0.20 gal) ~~0.30~~ 0.29 gallons [3 × Equip. Vol = ~~0.90~~ _____ gal]

[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0018-025.0-20161129 Time Collected: 1612 Comments: VOC 8260

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-29-16 Sampled By: David Warfel

Station (Well ID): MW0019 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556MPS Water Level Meter: Solinst

Time @ Start of Purging: 16:13 Time @ End of Purging: 16:27 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 35 ft BTOC

Depth to Water: 2.96 ft BTOC Total Well Depth: 40 ft BLS Screen Interval: 30-40 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
16:13	Start	24.91	6.63	1.023	15.0	0.50	-70.8	0.82	0.667	clear	
16:23	1.0	24.60	6.68	1.075	4.54	0.53	-136.8	0.81	0.698	clear	
16:25	1.2	24.57	6.71	1.075	2.80	0.53	-148.6	0.53	0.699	clear	
16:27	1.4	24.58	6.69	1.073	2.65	0.53	-154.7	0.46	0.697	clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 45 ft) + (Flow Through Cell Volume 0.2 gal) = 0.32 gallons [3 × Equip. Vol = 0.96 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0019-035.0-~~112~~20161129 (DW) Time Collected: 16:27 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No. FR1352E Phase: 26 Date: 11-28-16 Sampled By: Ben Coppenger

Station (Well ID): MW0020 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: 501.552

Time @ Start of Purging: 1202 Time @ End of Purging: 1217 Total Purging Time: 15 min. Depth of Pump or Intake Tubing: 45 ft BTOC

Depth to Water: 2.71 ft BTOC Total Well Depth: 50 ft BLS Screen Interval: 40-50 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1202	Start	24.03	7.12	0.837	203	0.44	-88.1	1.41	0.658	Grey	
1213	1.1	22.80	8.47	2.465	16.4	1.27	-149.0	0.35	1.606	Clear	
1215	1.3	22.80	8.46	2.481	17.8	1.28	-154.3	0.35	1.620	Clear	
1217	1.5	22.83	8.44	2.483	16.9	1.29	-159.1	0.34	1.621	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.20 gal) = 0.34 gallons [3 × Equip. Vol = 1.02 gal]
[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW0020-045.0-20161128 Time Collected: 1217 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: Ben Coppenger

Station (Well ID): MW002I Purge Method: Pump ✗ Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) ~~✗~~ Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1032 Time @ End of Purging: 1046 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 25 ft BTOC

Depth to Water: 2.88 ft BTOC Total Well Depth: 30 ft BLS Screen Interval: 20-30 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1032	Start	23.62	7.44	0.621	144	0.31	-66.0	2.34	0.441	Yellow	
1042	1.0	23.36	6.36	0.946	148	0.47	-196.5	0.60	0.615	Yellow	
1044	1.2	23.36	6.36	0.945	144	0.47	-209.8	0.56	0.614	Yellow	
1046	1.4	23.38	6.36	0.945	~~156~~ 146	0.47	-229.6	0.52	0.615	Yellow	

See FS ~~2200~~ 2212 ~~2.4~~ 3.05 for turbidity allowance

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater. ~~See FS 2200 2.4 SOPs~~

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 35 ft) + (Flow Through Cell Volume 0.20 gal) = ~~0.30~~ 0.29 gallons [3 × Equip. Vol = ~~0.90~~ 0.87 gal]
[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW002I-025.0-20161130 Time Collected: 1046 Comments: VOC 8260

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: Ben Coppenger

Station (Well ID): MW0022 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1015 Time @ End of Purging: 1029 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 35 ft BTOC

Depth to Water: 2.86 ft BTOC Total Well Depth: 40 ft BLS Screen Interval: 30-40 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1015	Start	23.74	7.47	0.539	43.7	0.27	33.1	1.92	0.418	Grey	
1025	1.0	22.94	6.96	1.198	6.36	0.60	-179.1	1.03	0.778	Clear	
1027	1.2	22.99	7.00	1.199	5.96	0.60	-192.3	0.96	0.780	Clear	
1029	1.4	22.98	7.01	1.200	6.07	0.60	-201.6	0.91	0.781	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 45 ft) + (Flow Through Cell Volume 0.20 gal) = 0.32 gallons [3 × Equip. Vol = 0.96 gal]

[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID LC39B-MW0022-035.0-20161130 Time Collected: 1029 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC 39 B Project No.: ER1352E Phase: 16 Date: 11-30-16 Sampled By: David Warfel

Station (Well ID): MW0023 Purge Method: Pump X Bailer Pump Type: (DW) Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 10:23 Time @ End of Purging: 10:50 Total Purging Time: 27 min. Depth of Pump or Intake Tubing: 45 ft BTOC

Depth to Water: 2.9 ft BTOC Total Well Depth: 50 ft BLS Screen Interval: 40-50 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
10:23	Start	24.27	7.00	1.423	107	0.73	8.0	0.85	0.971	light grey	
10:33	1.0	24.12	7.40	2.297	43.9	1.17	-0.4	0.93	1.498	yellow hue	
10:35	1.2	24.08	7.48	2.343	29.5	1.20	0.5	0.95	1.531	clear	
10:37	1.4	24.07	7.52	2.401	25.1	1.24	0.1	0.92	1.562	clear	
(DW) 10:~~39~~45	2.2	24.08	7.57	2.402	20.0	1.24	-1.6	0.84	1.574	clear	
10:48	2.5	24.09	7.58	2.422	19.0	1.24	-3.4	0.78	1.573	clear	
10:50	2.7	24.09	7.59	2.425	15.6	1.25	-4.8	0.77	1.577	clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.2 gal) = 0.34 gallons [3 × Equip. Vol = ~~0.9~~ 1.02 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC 39B-MW0023-045.0-20161130 Time Collected: 10:50 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: Ben Coppenger

Station (Well ID): MW0024 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geoflemp Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556MPS Water Level Meter: Solinst

Time @ Start of Purging: 1102 Time @ End of Purging: 1126 Total Purging Time: 24 min. Depth of Pump or Intake Tubing: 35 ft BTOC

Depth to Water: 3.32 ft BTOC Total Well Depth: 40 ft BLS Screen Interval: 30-40 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1102	Start	23.49	6.80	1.115	136	0.55	-78.4	0.75	0.727	~~TDS~~ Yellow	
1112	1.0	23.51	7.02	1.216	131	0.61	-164.0	0.44	0.791	Yellow	
1122	2.0	23.46	7.08	1.240	19.3	0.62	-286.1	0.39	0.806	Clear	
1124	2.2	23.46	7.08	1.239	18.5	0.62	-287.5	0.39	0.804	Clear	
1126	2.4	23.47	7.08	1.237	16.1	0.62	-288.6	0.38	0.805	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 45 ft) + (Flow Through Cell Volume 0.20 gal) = 0.32 gallons [3 × Equip. Vol = 0.96 gal]

[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0024-035.0-20161130 Time Collected: 1126 Comments: VOC8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: David Warfel

Station (Well ID): MW0025 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556MPS Water Level Meter: Solinst

Time @ Start of Purging: 11:22 Time @ End of Purging: 11:36 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 45 ft BTOC

Depth to Water: 3.2 ft BTOC Total Well Depth: 50 ft BLS Screen Interval: 40-50 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
11:22	Start	24.49	7.93	2.420	143	1.25	-8.7	1.03	1.554	yellow	
11:32	1.0	24.47	7.97	2.776	13.7	1.43	-40.5	0.53	1.802	clear	
11:34	1.2	24.48	7.98	2.796	10.2	1.45	-46.4	0.48	1.820	clear	
11:36	1.4	24.46	7.96	2.809	10.1	1.46	-50.0	0.43	1.830	clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.2 gal) = 0.34 gallons [3 × Equip. Vol = 1.02 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0025-045.0-20161130 Time Collected: 11:36 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: Ben Coppenger

Station (Well ID): MW0026 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1143 Time @ End of Purging: 1217 Total Purging Time: 34 min. Depth of Pump or Intake Tubing: 35 ft BTOC

Depth to Water: 3.13 ft BTOC Total Well Depth: 40 ft BLS Screen Interval: 30-40 ft BLS Well diameter: 1 in Well Volume: ____ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1143	Start	24.19	7.72	1.118	326	0.56	-117.6	1.10	0.754	Brown	
1153	1.0	23.41	6.88	1.260	143	0.63	-165.1	0.83	0.819	yellow	
1203	2.0	23.39	6.79	1.235	123	0.61	-273.8	0.57	0.803	Yellow	
1213	3.0	23.42	6.76	1.224	111	0.61	-308.2	0.46	0.796	Yellow	
1215	3.2	23.46	6.75	1.224	108	0.61	-309.4	0.46	0.796	Yellow	
1217	3.4	23.45	6.75	1.224	110	0.61	-310.4	0.46	0.796	Yellow	
					See FS 2200 2.4 SOPs						
					FS 2212 3.5 for turbidity allowance						

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater. BC See FS 2200 2.4 SOPs

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 45 ft) + (Flow Through Cell Volume 0.20 gal) = 0.32 gallons [3 × Equip. Vol = 0.96 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0026-035.0-20161130 Time Collected: 1217 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC 39 B Project No.: ER 1352E Phase: 16 Date: 11-30-16 Sampled By: David Warfel

Station (Well ID): MW0027 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) TSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 11:56 Time @ End of Purging: 12:24 Total Purging Time: 28 min. Depth of Pump or Intake Tubing: 45 ft BTOC

Depth to Water: 3.2 ft BTOC Total Well Depth: 50 ft BLS Screen Interval: 48-50 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
11:56	Start	24.58	8.73	3.050	Out of range	1.61	-25.4	0.75	2.060	light brown	
12:06	1.0	24.11	8.36	3.472	383	1.82	-62.0	0.55	2.260	dark yellow	
12:12	1.6	24.08	8.27	3.497	143	1.84	-69.2	0.52	2.273	yellow	
12:17	2.1	24.08	8.21	3.502	77.5	1.84	-73.2	0.49	2.264	green/ yellow	
12:20	2.4	24.09	8.18	3.443	49.5	1.80	-75.4	0.45	2.237	yellow hue	
12:22	2.6	24.07	8.16	3.483	10.3	1.83	-76.6	0.43	2.261	yellow	
12:24	2.8	24.06	8.15	3.431	33.0	1.80	-77.8	0.42	2.230	yellow	

→ High & unstable turbidity → purged 5x well screen volume = (10 X 0.041) x 5 = 2.05 gal then sampled

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.2 gal) = 0.34 gallons [3 × Equip. Vol = 1.02 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0027-045.0-20161130 Time Collected: 12:24 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: Ben Coppenger

Station (Well ID): MW0028 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): ~~Geo~~ Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1600 Time @ End of Purging: 1615 Total Purging Time: 15 min. Depth of Pump or Intake Tubing: 45 ft BTOC

Depth to Water: 3.08 ft BTOC Total Well Depth: 50 ft BLS Screen Interval: 40-50 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1600	Start	24.00	6.43	1.034	25.3	0.52	-47.9	1.94	0.740	Clear	
1611	1.1	22.91	7.68	3.420	17.6	1.80	-164.6	0.58	2.230	Clear	
1613	1.3	22.92	7.72	3.483	15.8	1.83	-170.6	0.57	2.269	Clear	
1615	1.5	22.91	7.73	3.484	13.9	1.84	-170.8	0.57	2.273	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.20 gal) = 0.34 gallons [3 × Equip. Vol = 1.02 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0028-045.0-20161130 Time Collected: 1615 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC 39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: David Wartel

Station (Well ID): MW0029 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 13:58 Time @ End of Purging: 14:12 Total Purging Time: 14 (AW) min. Depth of Pump or Intake Tubing: 35 ft BTOC

Depth to Water: 1.6 ft BTOC Total Well Depth: 40 ft BLS Screen Interval: 30-40 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) x Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
13:58	Start	24.52	8.26	0.908	48.9	0.46	-12.7	0.37	0.629	clear	
14:08	1.0	24.22	7.85	1.401	8.84	0.70	-37.3	0.35	0.911	clear	
14:10	1.2	24.08	7.82	1.415	6.55	0.71	-40.3	0.36	0.920	clear	
14:12	1.4	24.01	7.81	1.416	6.88	0.71	-43.2	0.36	0.920	clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft x Tubing Length 45 ft) + (Flow Through Cell Volume 0.2 gal) = 0.32 gallons [3 x Equip. Vol = 0.96 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0029-035.0-20161130 Time Collected: 14:12 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: Ben Coppenger

Station (Well ID): MW0030 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1349 Time @ End of Purging: 1406 Total Purging Time: 17 min. Depth of Pump or Intake Tubing: 45 ft BTOC

Depth to Water: 1.54 ft BTOC Total Well Depth: 50 ft BLS Screen Interval: 40-50 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1349	Start	24.87	7.61	2.852	40.9	1.48	-48.3	2.17	1.869	Yellow	
1400	1.1	23.36	7.53	9.941	19.6	5.61	-174.7	1.08	6.494	Clear	
1402	1.3	23.36	7.56	10.33	12.4	5.85	-177.3	1.03	6.757	Clear	
1404	1.5	23.33	7.59	10.32	11.6	6.24	-181.0	0.96	7.184	Clear	
1406	1.7	23.32	7.59	10.32	8.7	6.31	-181.3	0.95	7.227	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 55 ft) + (Flow Through Cell Volume 0.20 gal) = 0.34 gallons [3 × Equip. Vol = 1.02 gal]
[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW0030-045.0-20161130 Time Collected: 1406 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-28-16 Sampled By: Ben Coppenger

Station (Well ID): MW0031 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1409 Time @ End of Purging: 1423 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 12.5 ft BTOC

Depth to Water: 4.17 ft BTOC Total Well Depth: 15 ft BLS Screen Interval: 10-15 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1409	Start	24.87	8.34	0.668	131	0.32	-91.8	2.18	0.414	Grey	
1419	1.0	25.06	6.27	0.552	18.7	0.27	-99.2	1.86	0.357	Clear	
1421	1.2	25.06	6.28	0.548	19.3	0.26	-103.6	1.58	0.355	Clear	
1423	1.4	25.06	6.27	0.545	19.2	0.26	-107.5	1.46	0.353	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 20 ft) + (Flow Through Cell Volume 0.20 gal) = ~~0.30~~ 0.25 gallons [3 × Equip. Vol = ~~0.90~~ 0.75 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0031-012.5-20161128 Time Collected: 1423 Comments: VOC8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-28-16 Sampled By: Ben Coppenger

Station (Well ID): MW0032 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1440 Time @ End of Purging: 1454 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 13 ft BTOC

Depth to Water: 3.90 ft BTOC Total Well Depth: 18 ft BLS Screen Interval: 8-18 ft BLS Well diameter: 1 in Well Volume: ~~_____~~ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1440	Start	25.20	8.84	0.597	out of range	0.29	-152.0	0.51	0.388	Brown	
1450	1.0	25.23	7.92	0.621	18.0	0.30	-262.3	0.53	0.404	Clear	
1452	1.2	25.22	7.89	0.621	17.5	0.30	-263.8	0.53	0.403	Clear	
1454	1.4	25.23	7.87	0.619	18.6	0.30	-264.9	0.53	0.401	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 25 ft) + (Flow Through Cell Volume 0.20 gal) = 0.27 0.30 gallons [3 × Equip. Vol = 0.90 0.81 gal]
[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW0032-013.0-20161128 Time Collected: 1454 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-28-16 Sampled By: Ben Coppenger

Station (Well ID): MW0033 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1341 Time @ End of Purging: 1355 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 41 ft BTOC

Depth to Water: 3.92 ft BTOC Total Well Depth: 46 ft BLS Screen Interval: 36-46 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1341	Start	25.18	7.57	1.205	190	0.63	-113.8	2.34	1.578	Grey	
1351	1.0	23.52	7.60	4.398	17.7	2.34	-177.7	0.46	2.859	Clear	
1353	1.2	23.51	7.60	4.400	16.3	2.34	-178.2	0.45	2.853	Clear	
1355	1.4	23.50	7.60	4.368	18.6	2.32	-178.8	0.44	2.823	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 50 ft) + (Flow Through Cell Volume 0.20 gal) = 0.33 gallons [3 × Equip. Vol = 0.99 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0033-041.0-20161128 Time Collected: 1355 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: David Warfel

Station (Well ID): MW0034 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556MPS Water Level Meter: Solinst

Time @ Start of Purging: 15:35 Time @ End of Purging: 16:04 Total Purging Time: 29 min. Depth of Pump or Intake Tubing: 13 ft BTOC

Depth to Water: 3.75 ft BTOC Total Well Depth: 18 ft BLS Screen Interval: 8-18 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
15:35	Start	26.11	6.72	0.550	277	0.26	-70.0	0.41	0.358	dark brown	
15:45	1.0	26.07	6.48	0.545	255	0.26	-146.0	0.32	0.354	dark brown	
15:50	1.5	26.03	6.46	0.540	240	0.26	-236.5	0.27	0.351	lt brown	
15:56	2.1	26.05	6.33	0.538	256	0.26	-248.1	0.22	0.350	brown	
16:02	2.7	26.25	6.40	0.532	235	0.26	-242.3	0.19	0.345	brown	
16:04	2.9	26.06	6.33	0.533	247	0.26	-239.0	0.19	0.347	brown	
→ High + unstable turbidity = Purged 5x well screen volume → (10×0.041)×5= 2.05 gal → then sampled											

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.026 gal/ft × Tubing Length 23 ft) + (Flow Through Cell Volume 0.2 gal) = 0.26 0.5 gallons [3 × Equip. Vol = 0.78 1 gal]

[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW003A-013.0-20161130 Time Collected: 16:04 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: Ben Copperger

Station (Well ID): MW0035 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1515 Time @ End of Purging: 1549 Total Purging Time: 34 min. Depth of Pump or Intake Tubing: 23 ft BTOC

Depth to Water: 3.75 ft BTOC Total Well Depth: 28 ft BLS Screen Interval: 18-28 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1515	Start	25.71	8.65	0.430	657	0.20	-60.3	2.67	0.260	Brown	
1525	1.0	24.64	5.87	0.329	out of range	0.16	-167.2	1.50	0.214	Brown	
1535	2.0	24.57	5.70	0.328	out of range	0.16	-200.4	0.74	0.213	Brown	
1545	3.0	24.56	5.79	0.326	out of range	0.15	-222.2	0.51	0.212	Brown	
1547	3.2	24.55	5.79	0.325	out of range	0.15	-222.4	0.53	0.212	Brown	
1549	3.4	24.54	5.78	0.326	out of range	0.15	-223.7	0.52	0.212	Brown	
note: Turbidity high, purged 5X well screen vol ((10 x 0.041) x 5) = 2.05 gal after purging											

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 35 ft) + (Flow Through Cell Volume 0.20 gal) = ~~0.30~~ 0.29 gallons [3 × Equip. Vol = ~~0.90~~ 0.87 gal]

[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0035-023.0-20161130 Time Collected: 1549 Comments: VOC8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-28-16 Sampled By: Ben Coppenger

Station (Well ID): MW0036 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1507 Time @ End of Purging: 1521 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 25 ft BTOC

Depth to Water: 5.60 ft BTOC Total Well Depth: 30 ft BLS Screen Interval: 20-30 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1507	Start	25.15	7.97	0.353	out of range	0.17	-74.6	2.62	0.238	Brown	
1517	1.0	25.59	6.30	0.386	19.7	0.18	-199.0	0.50	0.251	tan	
1519	1.2	25.58	6.29	0.386	18.3	0.18	-202.2	0.49	0.252	tan	
1521	1.4	25.58	6.28	0.388	17.9	0.18	-206.7	0.47	0.251	clear/tan	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 35 ft) + (Flow Through Cell Volume 0.20 gal) 0.50 0.29 gallons [3 × Equip. Vol = 0.90 0.87 gal]

[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0036-025.0-20161128 Time Collected: 1521 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC 39 B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: David Wardle

Station (Well ID): MW 0037 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 14:45 Time @ End of Purging: 15:06 Total Purging Time: 21 min. Depth of Pump or Intake Tubing: 31 ft BTOC

Depth to Water: 3.9 ft BTOC Total Well Depth: 36 ft BLS Screen Interval: 26-36 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
14:45	Start	25.71	7.65	0.888	126	0.43	-39.6	0.27	0.579	Lightgrey	
14:55	1.0	25.54	7.56	0.911	48.1	0.45	-84.8	0.28	0.593	clear	
15:00	1.5	25.53	7.55	0.915	27.6	0.45	-96.7	0.30	0.595	clear	
15:02	1.7	25.54	7.54	0.920	17.7	0.45	-112.3	0.28	0.597	clear	
15:04	1.9	25.44	7.58	0.919	16.2	0.45	-117.5	0.27	0.598	clear	
15:06	2.1	25.39	7.39	0.917	14.7	0.45	-123.6	0.27	0.596	clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 40 ft) + (Flow Through Cell Volume 0.2 gal) = 0.3 gallons [3 × Equip. Vol = 0.9 gal]
[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW0037-0316-20161130 Time Collected: 15:06 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 11-30-16 Sampled By: Ben Coppenger

Station (Well ID): MW0038 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X ___ Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1431 Time @ End of Purging: 1448 Total Purging Time: 17 min. Depth of Pump or Intake Tubing: 41 ft BTOC

Depth to Water: 3.90 ft BTOC Total Well Depth: 46 ft BLS Screen Interval: 36-46 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) x Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1431	Start	25.88	9.03	1.193	87.4	0.58	-67.6	2.16	0.750	Yellow	
1441	1.0	24.01	8.28	2.899	35.4	1.50	-160.2	1.07	1.883	Clear	
1444	1.3	23.96	8.17	2.912	19.0	1.51	-167.3	0.97	1.891	Clear	
1446	1.5	23.94	8.17	2.903	17.6	1.51	-168.6	0.90	1.889	Clear	
1448	1.7	23.93	8.17	2.902	15.9	1.51	-168.8	0.87	1.893	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 50 ft) + (Flow Through Cell Volume 0.20 gal) = 0.33 gallons [3 × Equip. Vol = 0.99 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0038-041.0-20161130 Time Collected: 1448 Comments: VOC82603

Monitoring Well Sampling

Site: LC39B Project No.: FR1352E Phase: 16 Date: 12-1-16 Sampled By: Ben Coppenger

Station (Well ID): MW0039 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X __ Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1223 Time @ End of Purging: 1239 Total Purging Time: 16 min. Depth of Pump or Intake Tubing: 11 ft BTOC

Depth to Water: 3.55 ft BTOC Total Well Depth: 16 ft BLS Screen Interval: 6-16 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4″ = 0.02; 1″ = 0.041; 2″ = 0.163; 4″ = 0.653; 6″ = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1223	Start	28.11	5.22	21.32	287	13.34	-16.6	2.39	15.54	Brown	
1235	1.2	25.94	5.42	26.90	18.6	16.46	-156.0	0.24	17.48	Clear	
1237	1.4	25.98	5.42	26.88	17.5	16.44	-157.0	0.24	17.46	Clear	
1239	1.6	25.99	5.42	26.87	13.8	16.43	-158.7	0.23	17.45	Clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 65 ft) + (Flow Through Cell Volume 0.20 gal) 0.4 gallons [3 × Equip. Vol = 1.2 gal] 0.37 1.11

[Tubing Inner Diameter Capacity Factors: 1/8″ = 0.0006; 1/4″ = 0.0026]

Sample ID: LC39B-MW0039-011.0-20161201 Time Collected: 1239 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC 39B Project No.: ER1352E Phase: 16 Date: ~~11-30-16~~ 12-01-16 (DW) Sampled By: David Warfel

Station (Well ID): MW0040 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556MPS Water Level Meter: Solinst

Time @ Start of Purging: 11:55 Time @ End of Purging: 12:24 Total Purging Time: 29 min. Depth of Pump or Intake Tubing: 17 ft BTOC

Depth to Water: 3.2 ft BTOC Total Well Depth: 22 ft BLS Screen Interval: 12-22 ft BLS Well diameter: 1 in Well Volume: — gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
11:55	Start	25.90	5.48	0.509	418	0.24	-82.3	0.96	0.335	dark yellow	
12:05	1.0	25.74	5.16	0.511	453	0.25	-109.1	0.48	0.333	light brown	
12:07	1.2	25.69	5.16	0.514	405	0.25	-114.9	0.41	0.335	brown	
12:09	1.4	25.32	5.15	0.519	385	0.25	-120.9	0.37	0.337	brown	
12:12	1.7	25.71	5.16	0.519	366	0.25	-125.6	0.35	0.338	dark yellow	
12:15	2.0	25.74	5.16	0.522	342	0.25	-129.3	0.34	0.338	dark yellow	
12:18	2.3	25.71	5.18	0.518	310	0.25	-134.8	0.33	0.337	yellow	
12:22	2.7	25.73	5.19	0.520	292	0.25	-139.1	0.33	0.338	yellow	
12:24	2.9	25.73	5.20	0.526	292	0.25	-141.5	0.32	0.342	yellow	
→ High + unstable			Turbidity ⇒ purged 5x well screen volume =								
			(10 x 0.041) x 5 = 2.05 gal then sampled								

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 26 ft) + (Flow Through Cell Volume 0.2 gal) = ~~0.5~~ 0.27 gallons [3 × Equip. Vol = ~~0.9~~ 0.81 gal]
[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LC39B-MW0040-017.0-20161201 Time Collected: 12:24 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC39B Project No.: FR352E Phase: 16 Date: 12-1-16 Sampled By: Ben Coppenger

Station (Well ID): TA0002S Purge Method: Pump ✓ Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X ___ Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Geopump Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 1145 Time @ End of Purging: 1201 Total Purging Time: 16 min. Depth of Pump or Intake Tubing: 13 ft BTOC

Depth to Water: 3.32 ft BTOC Total Well Depth: 18 ft BLS Screen Interval: 8-18 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) × Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
1145	Start	27.48	7.50	5.811	64.3	3.16	-7.5	4.67	3.840	yellow	
1157	1.2	25.04	4.94	5.825	16.8	3.15	-121.9	0.57	3.785	clear	
1159	1.4	25.03	4.94	5.822	13.9	3.15	-123.6	0.54	3.784	clear	
1201	1.6	24.99	4.93	5.821	10.9	3.15	-125.7	0.52	3.784	clear	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 60 ft) + (Flow Through Cell Volume 0.20 gal) = ~~0.40~~ 0.36 gallons [3 × Equip. Vol = ~~1.2~~ 1.08 gal]

[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: LOX-TA0002S-013.0-20161201 Time Collected: 1201 Comments: VOC 8260B

Monitoring Well Sampling

Site: LC 39B Project No.: FR1352G Phase: 16 Date: 12-01-16 Sampled By: David Warfel

Station (Well ID): TA00045 Purge Method: Pump X Bailer Pump Type: ___ Submersible (__ Teflon __ SS __ Other) X Peristaltic ___ Centrifugal ___ Bladder

Pump (Make & Model): Proactive Alexis Purge Rate: 0.1 gpm Water Quality Meter (Make & Model) YSI 556 MPS Water Level Meter: Solinst

Time @ Start of Purging: 10:07 Time @ End of Purging: 10:21 Total Purging Time: 14 min. Depth of Pump or Intake Tubing: 13 ft BTOC

Depth to Water: 4.82 ft BTOC Total Well Depth: 18 ft BLS Screen Interval: 8-18 ft BLS Well diameter: 1 in Well Volume: ___ gal

Well Volume = (Total Well Depth – Depth to Water) x Well Capacity [Well Capacity Factors: 3/4" = 0.02; 1" = 0.041; 2" = 0.163; 4" = 0.653; 6" = 1.469]

Time	Cumulative Purge Volume (gal)	Temp (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	Salinity (%)	ORP (mV)	DO (mg/L)	TDS (g/L)	Color	Comments
10:07	Start	27.12	5.88	0.436	22.1	0.21	-12.7	0.77	0.282	~~yellow~~ Clear	DW
10:17	1.0	27.25	5.78	0.431	8.87	0.21	-49.3	0.39	0.281	~~yellow~~ Clear	DW
10:19	1.2	27.20	5.88	0.434	6.55	0.21	-96.3	0.39	0.282	yellow	
10:21	1.4	27.34	5.90	0.434	5.84	0.21	-119.2	0.40	0.282	yellow	

Notes:

1. When purging well with pump or intake tubing within the well screen, purge minimum of one equipment volume prior to first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart; must purge minimum of three equipment volumes prior to collecting sample.
2. When purging a well with partially submerged well screen, purge minimum of one well volume prior to collecting first stabilization parameter measurements. Take additional stabilization parameter measurements no sooner than 2 minutes apart, must purge minimum of three equipment volumes prior to collecting sample.
3. Three consecutive measurements of the five stabilization parameters listed, must be within the stated limits for sampling: temperature: ±0.2 °C; pH: ±0.2 standard units; specific conductance: ±5.0% of reading; DO is no greater than 20% saturation at field measured temperature; and turbidity ≤ 20 NTUs.
4. For high DO and/or Turbidity, check flow through cell for air bubbles – this may be causing erroneous readings. Turbidity should be verified visually and with a separate turbidity meter (if available). All attempts should be made to get the parameters within the specified limits. Verify initial calibration on water quality meters was performed correctly before using again.
5. If DO and/or turbidity stabilization parameter limits cannot be met (temp, pH, conductivity ranges remain within limits), the sampling team leader may decide whether or not to collect a sample or to continue purging five volumes of the screened interval; alternative stabilization parameter limits after purging five volumes of the screened interval are as follows: DO ± 0.2 mg/L or 10%, whichever is greater; and turbidity ± 5 NTUs or 10%, whichever is greater.

Equipment Volume = (Tubing Capacity 0.0026 gal/ft × Tubing Length 23 ft) + (Flow Through Cell Volume 0.2 gal) = ~~0.5~~ 0.26 gallons [3 × Equip. Vol = ~~0.1~~ 0.78 gal]

[Tubing Inner Diameter Capacity Factors: 1/8" = 0.0006; 1/4" = 0.0026]

Sample ID: ~~LC39B~~ LOX-TA00045-013.0-20161201 Time Collected: 10:21 Comments: VOC 8260B

JANUARY THROUGH FEBRUARY 2017
AIR SPARGE WELL INSTALLATION

FIELD FORMS

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/9/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW Installation

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

7:15 Dave Arrive site, Video area. LOX Area.
7:45 Meet Eric Sayer AT pad ops bldg.
8:30 Pre Construction meeting w/ Mike D. & Pad ops crew.
9:45 Nuts & Bolts meeting.
10:00 Ryan Tuttle & EPI CREW Arrive, DNS Conducts Safety Discussion / Tailgate meeting.
Drillers Stage Materials & Equipment.
12:15 Break for Lunch.
13:00 Return from Lunch. Drillers set up on ASW 241.
15:19 ASW 241 Complete, Pull Casing move to ASW 244. (Screen 20-22').
15:50 Set, Sand & Seal Complete; Allow Bentonite to Hydrate, develop well.
16:30 ASW 244 Complete, Clean up & Secure Site.
16:45 Depart site.

Plans/Future Activities

1/9/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection
Date: 1/9/2017
Task No.:

Work Performed

Well Installation: Air Sparge
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

05:30 Leave house
08:00 Onsite, arrive at badging station
08:15 Drillers contact RPT, stuck in traffic
09:20 Drillers arrive at badging station
10:30 Arrive at LC39B, getting badge overlay for site access
12:15 Out to lunch
13:15 Back from lunch, going over well specs w/ E. Sager
13:40 Setup at ASW-268, screen interval 35-37', total depth 38' (one foot sump)
16:05 Finish ASW-268
16:15 Setup at ASW-269, screen interval 35-37', total depth 38' (one foot sump)
16:40 Reach TD of 38' BLS at ASW-269, preparing to leave site
16:50 Offsite
17:40 Arrive at hotel

Plans/Future Activities

Signature/Date 1/9/2017

Geosyntec consultants

DAILY FIELD REPORT

DAJ

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/10/2017
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW Install

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:00 DMS Arrives site, Drillers onsite.
DMS Conducts tailgate meeting - Lifting Safety.
Get overlays from pad ops.
6:35 Drillers fill water tanks.
7:16 Begin Drilling ASW-278.
7:57 Drilling, Set, Sand & Seal Complete. Allow Bentonite to Hydrate.
8:30 ASW 278 Complete move TO ASW 273.
9:25 ASW 273 Set, Sand & Seal Complete, ~~Allow DMS~~ Allow Bentonite to Hydrate, Develop well.
9:25 Grout ASW 273.
10:07 Grouting ASW 273 Complete, move to ASW 271.
10:55 ASW 271 set, Sand & seal complete, Allow Bentonite to hydrate. Develop well.
11:25 Grout ASW 271.
11:36 ASW 271 Complete, move to ASW 272,
12:00 Break for Lunch.
12:45 Return from Lunch, Begin ASW 272.
13:31 ASW 272 set, Sand & Seal Complete. Allow

~~Plans/Future Activities~~ DMS

Bentonite to hydrate. Develop well.
14:01 Grout well,
14:20 Move to ASW 247.
15:00 Set, Sand & Seal Complete. Allow Bentonite to Hydrate
Develop well.

1/10/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/10/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW Install

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

15:30 Grout ASW 247.
15:55 ASW 247 complete. Clean up & secure area.
16:35 Depart Site. DMS marks locations of S,40 - Outside Fence.
17:15 DMS Departs Site.

Plans/Future Activities

1/10/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/10/2017
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW Well Install

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

05:15 Leave hotel
05:50 Onsite
06:00 Receive overlay from LC39B pad office
07:00 Setup at ASW-269 to complete well installation
08:00 Finish ASW-269 well installation
08:15 Setup at ASW-243 to complete well installation
09:40 Finish ASW-243 installation
09:50 Setup at ASW-242 to complete well installation
10:50 Begin repair on rig pump
12:00 Finish repair on rig pump, begin grouting at ASW-242
12:10 Finish ASW-242, drillers repairing pump again due to bad ground wire.
12:30 Drillers take lunch
13:00 Setup at ASW-245
14:20 Finish ASW-245, mobilizing to ASW-0009
14:45 Setup at ASW-0009
16:15 Reach depth of 60' at ASW-009, place sandpack and bentonite in annulus, will allow to hydrate overnight and complete
17:15 Arrive at hotel

Plans/Future Activities

Finish ASW-0009 installation

Megan Sattler 1/10/2017
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/11/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW install

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 Arrive site, Tailgate meeting.
7:00 Set up for ASW-57. Clay encountered @ 48' bls. Contact ES & JJL to confirm well depth. Well to be set @ 49' Total depth so bottom of well screen is @ Top of Clay.
8:30 ASW-57 Set, Sand & Seal Complete; Allow Bentonite to hydrate & develop well.
9:45 ASW-57 Complete, move to ASW-48.
11:13 ASW-48 Set Sand & Seal Complete; Allow Bentonite to hydrate and develop well.
12:00 ASW-48 Complete, move to ASW-49.
12:10 Break for lunch.
13:05 Return from Lunch, Continue ASW-49.
13:58 Set, Sand & Seal Complete; allow Bentonite to hydrate, develop well.
14:08 Grout well.
14:26 ASW-49 Complete, move to ASW-50.
15:17 Set, Sand & Seal complete; Allow Bentonite to hydrate, Develop well.

~~Plans/Future Activities~~ OMS

15:50 Drillers return From hydration break. (33 minutes)
16:25 ASW 50 Complete, Clean up & secure Site.
16:40 Depart Site.

1/11/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/11/2017
Task No.:

Work Performed

Well Installation: Air sparge
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

06:00 Leave hotel
06:30 Onsite, get overlay from pad office
06:45 Health and safety meeting
07:00 Resume ASW-0009 installation
07:35 Finish ASW-0009 installation
07:45 Setup at ASW-0004 for well installation
08:35 Bolts coming loose on sonic head, drillers begin tightening and replacing bolts
09:15 Resume drilling at ASW-0004
11:00 Finish ASW-0004 installation, moving to ASW-0246 for well installation
11:15 Begin ASW-0246 well installation
13:00 Finish ASW-0246 well installation, moving to ASW-0277
13:25 Begin ASW-0277 well installation
15:00 Finish ASW-277 well installation, setup at ASW-275
16:30 Finish ASW-275 installation
16:40 Offsite 17:15 Arrive at hotel

Plans/Future Activities

AT
Signature/Date 1/10/2017
11

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/12/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory: ASW INSTALL
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 Arrive Site, Get overlay Badges. DMS Conducts Tailgate meeting.
7:00 Set up on ASW 43.
9:00 ASW 43 Complete, move to ASW 42.
10:11 ASW 42 Set, Sand & Seal Complete, Allow ~~Hydrate to DM~~ Bentonite to hydrate.
~~11:04~~ 11:04 Begin Grouting.

30 MINUTE Delay: Drillers Did Not Return AFTER 20 minute Hydration time

11:20 Grouting Complete, move to ASW 41
12:11 ASW 41 Set, Sand & Seal Complete. Allow Bentonite to Hydrate, Develop well. Break for Lunch.
13:12 Return From Lunch, Grout ASW 41. 14:00 Begin ASW 15
14:33 Set, Sand, Seal Complete; Allow Bentonite to Hydrate, Develop well.

Plans/Future Activities

14:53 Grout well.
15:26 ASW 15 Complete, move to ASW 14.
16:12 Set, Sand & Seal Complete.
Clean up & secure site for Departure.

1/12/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/12/2017
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW install

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

06:00 Leave hotel
06:30 Onsite, get badge overlay from pad office
06:45 Health and safety meeting
07:00 Setup at ASW-276
~~08~~08:35 Finish ASW-276, setup at ASW-274
08:40 Begin ASW-274 installation
09:45 Finish at ASW-274, setup at ASW-249
09:50 Begin ASW-249 installation
11:15 Finish ASW-249 installation, setup at ASW-248
11:20 Begin ASW-248 installation, drillers take 45 min lunch
13:20 Finish ASW-248, setup at ASW-270
13:50 Begin ASW-270 installation
15:05 Finish ASW-270, mobilizing equipment to move to locations outside fence
16:30 Offsite
17:15 Arrive at hotel

Plans/Future Activities

Ryan Smith 1/12/2017
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/13/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW Installation

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 DWS Arrives S/the Drillers are on site. DWS Conducts Tailgate meeting.
7:00 Continue Grouting ASW 14.
8:00 ASW 14 complete, move to ASW 8.
9:30 Set, Sand & Seal Complete, Allow ~~Grout~~ DWS Bentonite to hydrate & Develop well.
~~9:55~~ ~~Grout~~
10:25 ASW 8 complete, move to ASW 3.
11:17 ~~Move DWS~~ ASW 3 complete, move to ASW 5.
12:40 ASW 5 Set, Sand & Seal complete ~~move to ASW 5 DWS~~, Set, Sand & Seal Complete. Allow Bentonite to Hydrate, Develop well.
DWS ~~12:50~~ 13:00 Clean up & secure site.
13:30 Depart site for the weekend.

Plans/Future Activities

1/17/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/13/2017
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW Installation

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

05:50 Leave hotel
06:25 Onsite, check in at pad office to receive overlay
06:45 Health and safety meeting
07:00 Setup at ASW-0267
08:35 Finish ASW-0267.
08:40 Setup at ASW-0265
09:40 Finish at ASW-0265, setup at ASW-0261
09:45 Begin drilling at ASW-0261
10:55 Finish at ASW-0261
11:00 Setup at ASW-0264
12:00 Finish ASW-0264
12:45 Drop off paperwork to D. Sizemore
13:00 Offsite

Plans/Future Activities

Ryan Suttle 1/13/2017
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/16/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory: ASW Install
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

8:00 DNS arrives site, Mike Burcham on site, DNS to mark additional ~~utilities~~ locations.
8:50 Drillers arrive, set up.
9:50 Ben Coppinger, Jim Longenbuch arrive for H&S Audit.
10:10 Drillers set up on ASW 263.
10:40 Set, Sand & Seal complete, Allow to hydrate, Develop
11:00 ~~Grout well~~ DNS Grout well.
11:10 ASW 263 Complete, move to ASW-266.
11:43 ASW-266 set, Sand & Seal Complete; Allow Bentonite to hydrate, Develop wells.
12:15 ASW-266 complete move to ASW-262.
13:00 Set, Sand & Seal complete; Allow Bentonite to hydrate, develop well. Break for Lunch.
13:45 Return from lunch, Continue ASW-262.
13:53 ASW 262 complete, move to ASW 260.
14:25 Set, Sand & Seal Complete; Allow Bentonite to hydrate, develop well.
14:45 Grout well.

~~Plans/Future Activities~~ DNS

15:00 ASW260 complete, move to ASW-259.
15:50 Set, Sand & Seal complete; Allow Bentonite to hydrate, develop well.
16:30 Clean up & Secure Site.
16:40 Depart Site.

1/16/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Date: 1/16/17
Project No.: FR1352E Phase 08
Task No.:
Contractors: Groundwater Protection (Preston, Billy, Ben)

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

0830 - Mike Burcham (MB) arrives on site & gets badges to enter pad
0845 - MB meets Dave Seamore (DS). Discuss scope of work for the week.
0915 - Conduct HaS meeting w/ GPI drill crew MB will work with.
0930 - Begin work @ ASW005. Needs to be grouted
0950 - ASW005 completed
1000 - Begin ASW010. Proposed screen interval = 57-54 ft BLS
Jim Langenbach (JL) on site. Discusses work scope & safety. During soil boring collection (55-60 ft BLS), he assists w/ logging. Noted a lense/seam of clay (<1" thick) @ ~56.5 ft BLS. JL has us install screen @ proposed depth & not alter it (57-54 ft BLS)
1130 - ASW010 completed (bentonite hydrated, developed, grouted) MB
Mob to ASW016
1140 - Begin drilling ASW016
1230 - Hydrate bentonite & break for lunch
1320 - Return from lunch. Grout & complete ASW016
1340 - Mob to ASW044
1510 - Complete ASW044 (bentonite hydrated, developed, & grouted). Mob to ASW017
1520 - Begin drilling @ ASW017

Plans/Future Activities

1630 - MB ASW017 set (filter pack, bentonite, developed). Demob for day. Will grout in AM.
1645 - off site & badges returned

1/16/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/17/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW INSTALL

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 DMS on site, Drillers on site - Get overlays.
6:40 H&S @ PSI meeting.
7:00 Set up on ASW 258.
8:01 Set, Sand & Seal Complete; Allow Bentonite To hydrate, Develop.
8:21 Grout well.
8:30 move to ASW-256.
8:59 Set, Sand Seal Complete, Allow Bentonite to hydrate, develop well.
9:10 Grout well. move to ASW-254.
9:40 Set, Sand & Seal Complete; Allow Bentonite to hydrate, develop well.
10:10 DMS Grout well, move to ASW-257.
11:30 ASW-257 ~~Complete~~ DMS Set, Sand & Seal Complete; Allow Bentonite to Hydrate, develop. Break for lunch.
12:25 Return from Lunch, Grout ASW-257.
12:45 ASW-257, Complete, move to ASW-253
13:15 Set, Sand & Seal Complete; Allow Bentonite to Hyd.

Plans/Future Activities

develop well.
13:47 ~~DMS~~ Grout well.
13:57 ASW-253 Complete, move to ASW-255.

1/17/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/17/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW INSTALL

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

14:37 Set, Sand & Seal Complete; Allow Bentonite to hydrate, develop well.
15:00 Grout well.
15:18 ASW-255 Complete, move to ASW 252.
16:02 ASW 252 Set, Sand & Seal Complete; Allow Bentonite to hyd., Develop well.
Clean up & Secure Site
16:30 Depart Site.

Plans/Future Activities

1/17/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection
Date: 1/17/17
Task No.:

Work Performed

Well Installation: X
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0630 - Arrive @ bldg station
0645 - On site. Dave Sycamore (DS) conducts H_2S meeting
0700 - Mob to drilling area. Need to grout ASW017
0730 - Complete grouting of ~~ASW~~017; Mob to ASW056
0745 - Begin ASW056
0920 - Complete ASW056 (hydrate, develop, grout). Mob to ASW052
0930 - Begin ASW052
1000 - 2-inch clay layer observed @ ~54 ft BLS @ ASW052. ~~Increase~~ Decrease screen depth ~6" (goal of 51.5-53.5 ft BLS)
1055 - Complet ASW052 (hydrate, develop, grout). Mob to ASW051
1105 - Begin ASW051
1200 - Casing on ASW051 became loose. Drillers flushed inside of well w/ potable water to remove sand that had gotten inside well and were able to tighten the well casing back up. Will develop well extra
1210 - Break for lunch. ASW051 seal is hydrating
1255 - Back from lunch.
1315 - Finish ASW051 (hydrate, develop, grout). Mob to ASW045
1325 - Begin ASW045
1400 - CLAY identified (3" thick layer interbedded w/ sand + shell) @ ~~48~~ 53 ft BLS. Will increase screen height to 51'-53' ft BLS

Plans/Future Activities

1410 - Rig down. Bolts on drive head are starting to sheer. Drillers do not want to risk sheering all bolts. Fixing now
1430 - Other crew has extra bolts. Replacing broken bolts now
1435 - Rig fixed. Resume drilling

1/17/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/17/17
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

1520 - Complete ASW045. Mob to ASW055
1535 - Begin ASW055.
1430 - Bentonite set and ASW055 developed. Leave site
1445 - Turn in badges.

Plans/Future Activities

1/17/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/18/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW Install

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 DMS on site. Drillers on site. Get overlay Badges. Conduct Tailgate meeting.
7:00 Grout ASW-252.
7:30 Move to ASW-240.
8:40 ASW-240 Set, Sand & Seal Complete, ~~Monitone~~ Allow Bentonite to hyd., develop well
9:04 ASW-240 Complete, Move to ASW-239.
9:48 Set, Sand & Seal; Allow Bentonite to Hydrate. Develop well.
10:34 Move to ASW-234.
11:35 Set, Sand & Seal Complete; Allow Bentonite to hydrate, develop well. Break for Lunch
12:25 Return from Lunch, Grout ASW-234.
12:55 ASW-234 Complete, Move to ASW-236
1330 ASW 236 Set, Sand & Seal Complete; Allow Bentonite to hydrate, Develop well.
1350 Grout well.
14:00 Move to ASW-237.
14:30 Set, Sand & Seal Complete; Allow Bentonite to

Plans/Future Activities

hydrate, develop well.
14:50 Grout well.
15:20 Well Complete; move to ASW-235.
15:41 Set, Sand & Seal complete, Allow Bentonite to hydrate; Develop well.
16:30 offsite

1/18/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/18/17
Task No.:

Work Performed

Well Installation: X
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0630 - Arrive on site & collect badges
0645 - Conduct H&S meeting
0710 - Mob to ASW055 -> still needs to be grouted
0735 - ASW055 complete. Mob to ASW046.
0800 - Begin ASW046
0700 - Utility locators on site. Clear location ASW053
0940 - Finish ASW046 (hydrate, develop, grout). Mob to ASW053
0955 - Begin ASW053
1135 - Complete ASW053 (hydrate, develop, grout). Demob from area
1200 - Mob to ASW001. Break for lunch
1245 - Return from lunch. Hand clear ASW001
1305 - Begin ASW001
1335 - Hydraulic leak noticed - drilling stopped. Bucket and pals deployed to contain leak. Tooling @ 55 ft BLS. Will stake locations & conduct other site maintenance during downtime
Spot checking marked locations, staking new ones, adjusting marked locations due to utilities
Moved (due to utilities): 073, 039, 006, 007, 013
1430 - Repair trackshoes up (Pirtek) & begins work

Plans/Future Activities

1515 - Hose fixed. Begin drilling again
1545 - ASW001 screen changed to 56'-58' due to CLAY/shell frag layer @ 58 ft BLS
1600 - Complete ASW001. Mob to ASW006
1620 - Begin drilling ASW006
1635 - Reach 50 ft BLS & leave site. Turn in badges

1/18/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 11/9/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW Installation

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 Arrive Site, Tailgate meeting.
7:00 Set up on ASW-238.
8:45 ASW 238 complete. Move in Fenced Area and set up lane Closure.
10:56 Set up on ASW-250.
12:12 ASW 250 set, Sand & Seal Complete; Allow Bentonite to hydrate & Develop well. Break for Lunch.
13:00 Return from Lunch, Grout ASW 250.
13:20 Move to ASW 251.
13:45 Set, Sand & Seal complete; Allow Bentonite to hydrate & develop well.
14:05 Grout ASW 251.
14:20 Move to ASW ~~1000~~ one 100.
16:30 Drilling ASW 100 Complete.
Drive off site to Rent Compressor to Sparge Wells Tomorrow.

Plans/Future Activities

11/9/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/19/17
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

0630 - Arrive on site
0645 - Dave Sizemore (DS) conducts H&S meeting & drillers mob to drilling location.
0700 - Begin drilling @ ASW006 (currently @ 50 ft BLS). Screen changed to 56'-58' due to lith.
0810 - Complete ASW006 (hydrated, developed, grouted). Mob to ASW002.
0820 - Begin ASW002
0945 - Complet ASW002 (hydrated, developed, grouted). Screen interval was not changed as the 8" shell layer appeared more sandy than clayey + was present deeper (~59 ft BLS)
Mob to ASW007
0955 - Begin ASW007 (moved ~6 ft due to utilities - SW)
1130 - Complete ASW007 (hydrated, developed, grouted). Screen interval change to 56-58 ft BLS due to clayey shell lithology @ 57.5 ft BLS
Mob to ASW013 -> moved ~2 ft NE due to utilities
1140 - Begin ASW013 -> Screen ↑ 56-58 ft BLS due to lithology
1230 - MB grabs lunch while drillers develop well + break for lunch
1330 - Begin grouting & pulling casing.
1350 - ASW013 complete (hydrated, developed, grouted). Mob to ASW022
1400 - Begin ASW022
1530 - Complete ASW022 (hydrated, developed, grouted). Screen ↑ 55.5'-57.5' due to lith.

ASW006 moved ~3 ft SW due to utilities

Plans/Future Activities

1540 - Begin ASW017
1630 - ASW017 set to depth, filter pack & seal placed. Screen change to 53.5 to 55.5 ft BLS due to clayey lithology observed ~~between~~ at 55 ft BLS (sand and clay lithology to 56.5 ft BLS)
1645 - Leave site & turn in badges

1/19/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/20/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: ASW Install

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 Arrive Site, Tailgate meeting.
7:00 Finish ASW ~~1000~~ 100.
8:00 Begin ASW 97.
11:30 ASW 97 Complete, begin ASW 95.
13:57 ASW 95 Complete, move to ASW 96.
16:00 ASW 96 Complete.
Clean up & secure site.
16:15 Depart Site.

Plans/Future Activities

1/20/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/20/17
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

0630 - Arrive on site. Get overlay

0645 - Dave Seemore (DS) conducts H+S meeting

0700 - Begin developing ASW047. Grout after development

0730 - Complete ASW047 - screen changed to 53.5'-55.5' due to clayey lithology
Mob to ASW012.

0740 - Begin ASW012. Will collect 10-ft core from 50-60 ft BLS

0830 - Mike Deliz (MD) on site right after soil core collection. Discuss lithology. MD says he is sparging another site in a more clayey layer than the SAND w/ interbedded/interlaminated layer observed. Agreed that we should set ASW sumps @ top of the shell/clay unit to target primarily sand unit. However, mentioned that in the Hot Spot areas we need to avoid clayey units & stay under the impacts

0920 - Complete ASW012 (hydrated, developed, grouted). Screen changed to 55'-57'

1045 - ASW testing has been underway for ~30 min. Currently injecting ~4.5 scfm of air @ ~40 psi into ASW001. There is a small ~~leak~~ noise leak in the test well head, unsure of volume of air lost due to this

0930-1050: Complete ASW011. Screen ~~set~~ changed set @ 56'-58' due to shell lithology.
Mob to ASW019

1100 - Begin ASW019

Plans/Future Activities

1110 - Stop ASW test (~5 cfm @ ~42 psi). Observe drop (not measured) in WL @ ASW002

1130 - While clearing location ASW018 utilities to close. Move ~1 ft SE

1150 - Begin testing ASW010. ~20 psi & 2 scfm

1/20/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/20/17
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

1200 - Bentonite setting, Break for lunch
1245 - Return from lunch. Check Asw test: ~4 cfm @ ~40 psi; grout ASW019
1300 - ASW019 complete (hydrated, developed, grouted). M-S to ASW018
1310 - ASW018 started
1330 - Drill rig down. Bolts have sheared of Drill head
1400 - Drill rig repaired
1500 - ASW018 completed (hydrated, developed, grouted). Mob to ASW020
1510 - Begin ASW020
1600 - Stop drilling at ASW020. Seal + filter added; developed. Casing left in over weekend will grout on Monday.
1630 - off site after cleanup.

Plans/Future Activities

1/20/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/23/17
Task No.:

Work Performed

Well Installation: ASW 98, 99, 94 (not completed)
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0800 Zackary Munger (ZM) leave Titusville office in Geosyntec field vehicle
0830 ZM arrive at 39B Pad Leader's office, get badge overlay. ZM meet at Pad B with Mike Burcham (MB) + Dave Sizemore (DS) to begin going over well install details
0920 DS conduct tailgate safety meeting
0930 Drillers begin setting up @ ASW-98
1045 ASW-98 set, sand + seal complete; allow bentonite to hydrate + develop well
1125 ASW-98 complete, move to ASW-99
1140 Break for lunch
1240 Return from lunch
1410 ASW-99 set, sand + seal complete; allow bentonite to hydrate + develop well
1450 ASW-99 complete, move to ASW-94
1600 ASW-94 set, sand + seal complete; allow bentonite to hydrate + develop well
1620 Drillers' fuel tank pump is not working to fuel the drill rig. Plan is to replace pump and finish grouting tomorrow
1630 Drillers leave site
1640 ZM leave site

Plans/Future Activities

Zackary W Munger 1/23/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: ~~1/23/16~~ 1/23/17
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

0730 - Mike Burnham (MB) arrives @ office to prep.
0800 - Leave for site
0830 - Arrive @ site, collect badges
0900 - Dave Sizemore (DS) conducts H+S meeting w/ FECL + GPI. Prep for work + discuss scope of work w/ Zack Munger (ZM)
1000 - Begin grouting ASW020 - developed on 1/20
1020 - Complete ASW020 (screened 56'-58'). Mob to ASW021.
1030 - Beg. ASW021.
1110 - Call Eric Sager (ES) about core @ ASW021. Is primarily clay. Decide to set screen @ ~52.5'-54.5' BLS → screened 52.5'-54.5'
1200 - Complete ASW021 (hydrated, developed, grouted). Break for lunch
1245 - Return from lunch. Mob to ASW026
1300 - Start drilling @ ASW026
1445 - Complete ASW026 (hydrated, developed, grouted). Screened 56'-58' due to lithology (to extend screen/filter pack above CLAY/SAND layers after in-field discussion w/ Jim Langenbach).
1500 - Begin ASW027. Moved ~3ft N due to utilities
1620 - Complete ASW027 (screened 46-48 ft BLS). Screen Discussion w/ JL
1630 - Begin ASW028

Plans/Future Activities

1640 - Stop ASW028 @ ~48 ft BLS. Leave tooling in and leave site

1/23/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/24/17
Task No.:

Work Performed

Well Installation: ASW 90,91,92,93,94
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600 Zackary Munger (ZM) leave Titusville office in Geosyntec field vehicle
0630 ZM arrive at LC39B Pad Leader's office and get overlay badge
0640 Dave Sizemore (DS) conduct tailgate safety meeting and everyone move to pad area for daily work.
0650 ZM's drill crew has to replace fuel pump on fuel tank prior to beginning work and then load up well materials
0800 Drillers set up at ASW-94 and grout well
0825 ASW-94 complete, move to ASW-93
0925 ASW-93 set, sand, + seal; allow bentonite to hydrate & develop well
1005 ASW-93 complete, move to ASW-92
1100 ASW-92 set, sand, + seal; allow bentonite to hydrate + develop well
1135 ASW-92 complete, move to ASW-91
1235 ASW-91 set, sand, + seal; allow bentonite to hydrate + develop well
1245 Drillers break for lunch
1300 ZM mark additional locations with GPS
1335 Drillers back on site resume ASW-91 grouting
1400 ASW-91 complete, move to ASW-90
1515 ASW-90 set, sand, + seal; allow bentonite to hydrate + develop well
1600 ASW-90 complete, move to ASW-87

Plans/Future Activities

1640 Stop drilling and clean up for the day resume ASW-87 tomorrow @ 55' bls
1650 Drillers + ZM leave site

ZM

Zackary W Munger 1/24/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/24/17
Task No.:

Work Performed

Well Installation: X
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0630 - Arrive on site & get bridge.
0645 - Leave site to get equipment. Dave Sizemore (DS) to oversee drilling activities in absence.
0800 - Return to site. ASW028 complete. Drillers mob to ASW025. ASW028 = 55'-57'
0825 - ~~Begin~~ (mob) Begin ASW025
0930 - Complete ASW025. Mob to ASW024
0945 - Begin ASW024.
1110 - Complete ASW024. Mob to ASW023
1215 - ASW023 installed (filter pack + seal). Drillers mob for lunch while seal sets
1300 - ASW023 complete. Screened 56'-58' due to lithology. Mob to ASW030
1315 - Start ASW030. Moved ~2 ft N. due to utilities
1445 - Complete ASW030. Mob to ASW031
1455 - Begin ASW031
1615 - Complete ASW031. Screened 56'-58' BLS due to large CLAY nodule @ 58 ft BLS. Mob to ASW032 + start drilling
1635 - Reach 50 ft + break for day
1645 - Off site

Plans/Future Activities

1/24/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/25/17
Task No.:

Work Performed

Well Installation: ~~ASW 85,87,88,279~~
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600 Zackary Munger (ZM) leave Titusville office in Geosyntec field vehicle
0630 ZM arrive at LC39B Pad Leader's office and get overlay badge
0645 Dave Sizemore (DS) conduct tailgate safety meeting. ZM's drill crew is short one helper today (2 total crew members). Everyone move to pad area for daily work
0715 Set up at ASW-87 and resume drilling
0745 ASW-87 set, sand, + seal; allow bentonite to hydrate + develop well
0830 ASW-87 complete, move to ASW-85
0845 Third man joins drill crew
0945 ASW-85 set, sand, + seal; allow bentonite to hydrate + develop well
1040 ASW-85 complete, move to ASW-88. Crew go to badging station to pick up additional materials
1115 ~~Drill crew back on site (32 minutes down time), restart ASW-88 ZM~~ Dave (driller) back on site, still waiting for Thomas (helper) with supplies
1205 Dave resume ASW-88 while helpers return supply truck (picked up at badging, unloaded, and returned to badging; 1 hr 25 min down time)
1240 Helpers return
1300 Bottom 5' of tooling in ground and threads from ~~rest of tooling~~ to ZM above broken off. Attempt to retrieve broken piece with extractor bit.
1315 Successfully remove broken piece. Drillers take lunch/smoke break

~~Plans/Future Activities~~ ZM

1345 Drillers resume installing ASW-88
1410 ASW-88 set, sand, + seal; allow bentonite to hydrate + develop well
1450 ASW-88 complete, move to ASW-279
1540 ASW-279 set, sand, + seal; allow bentonite to hydrate + develop well
1615 ASW-279 complete, move to ASW-89, ~~resume ZM~~

Continued on page 2

Zackary W Munger 1/25/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/25/17
Task No.:

Work Performed

Well Installation: ASW 85, 87, 88, 279
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1630 Secure site and leave

Plans/Future Activities

Jocelyn W Myers 1/25/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: EK-TAP
Project No.: TR0356E
Contractors:

Date: 11/15/17
Task No.: 05

Work Performed

Well Installation: X
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0630 - Arrive on site. GPI chart one man (Pistun) @ the moment b/c he can't find his badge
0645 - Dave Sizemore (DS) conducts H&S meeting
0700 - Arrive @ Pad. Collect DTW measurements from wells installed yesterday
0730 - Begin collecting 10-ft cores @ ASW032.
0825 - ASW032 complete. Screened 55.5-59.5 ft BLS to transect clay found @ 55.5'-56.0' w/ filter pack.
Mob to ASW033
0840 - Begin ASW033
MS 1000 - Complete ASW033. Screened 56'-58' BLS so at least 0.5' of screen was above clayey/sandy layer
1010 - Begin ASW034
1135 - Complete ASW034. Screened 56'-58' BLS to mostly avoid clayey/sandy layer @ 57.5 ft BLS
1145 - Begin ASW035
1245 - ASW035 set. Break for lunch while hydrating & developing
1330 - Return from lunch
1345 - ASW035 complete. Screened 56'-58' BLS due to clayey/sandy lithology @ 57.25 ft BLS. similar lithology present & shallower than 55 ft BLS

Plans/Future Activities

1400 - Start ASW036
1520 - Complete ASW036 - Screened 55-57 ft BLS due to shell & clay lithologies
1525 - Begin ASW054
1645 - ASW054 complete. Screened 55-57 ft BLS due to laminated clay lith.
Off site

11/15/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

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Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/26/17
Task No.:

Work Performed

Well Installation: ASW 81, 82, 86, 89
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600 Zackary Munger (ZM) leave Titusville office in Geosyntec field vehicle
0630 ZM arrive at LC39B Pad Leader's office and get overlay badge
0640 Dave Sizemore conduct tailgate safety meeting, and everyone move to pad area for daily work
0710 Set up at ASW-89
0815 ASW-89 set, sand, + seal; allow bentonite to hydrate + develop well
0850 ASW-89 complete, move to ASW-86
0945 ASW-86 set, sand, + seal; allow bentonite to hydrate + develop well
1030 ASW-86 complete, move to ASW-82
1140 ASW-82 set, sand, + seal; allow bentonite to hydrate + develop well. Drillers break for lunch
1225 Resume ASW-82
1240 ASW-82 complete, move to ASW-81
1425 ASW-81 set, sand, + seal; allow bentonite to hydrate + develop well
1515 ASW-81 complete, move to ASW-77
1630 Complete boring at ASW-77 to 60' bls, set well tomorrow, drillers clean up + secure site

ZM

Plans/Future Activities

Zachary W Munger 1/26/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

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Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/26/17
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

0640 - Arrive @ badging station
0645 - Dave Sizemore (DS) conducts H&S meeting
0715 - Set up @ ASW060. Begin drilling
0855 - Complete ASW060. Screened 54'-56' BLS due to clay/sand lithology.
0900 - Discuss marking locations w/ Alex W.
0905 - Mob to ASW059 & begin drilling
1010 - Complete ASW059. Screened 55-57' BLS due to clay/sand lithology
1020 - Begin drilling @ ASW063
1140 - Complete ASW063. Screened 55'-57' due to clay/sand lithology
1150 - Begin ASW062
1255 - Break for lunch while bentonite hydrates
1330 - Return from lunch. Grout ASW062
1350 - Complete ASW062. Screened 55'-57' BLS due to clay/sand
1400 - Begin ASW061. Moved ~ 2ft N due to utilities
1530 - Complete ASW061. Screened 56'-58' BLS due to clay/sand
1540 - Begin ASW058. Moved ~ 2ft S due to utilities
1645 - ASW058 Developed. Screened 55-57 ft BLS. Will hydrate overnight. Off site

Plans/Future Activities

1/26/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

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Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/27/17
Task No.:

Work Performed

Well Installation: ~~ASW 71,76,77,78~~
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600 Zackary Munger (ZM) leave Titusville office in Geosyntec field vehicle
0630 ZM arrive at LC39B Pad Leader's office, get overlay badge
0640 Dave Sicemone (DS) conduct tailgate safety meeting, everyone move to pad area to prepare for daily work
0710 Set up at ASW-77 and resume setting well
0730 ASW-77 set, sand, + seal; allow bentonite to hydrate + develop well
0815 ASW-77 complete, move to ASW-76
0945 ASW-76 set, sand, + seal; allow bentonite to hydrate + develop well
1030 ASW-76 complete, move to ASW-78
1135 ASW-78 set, sand, + seal; allow bentonite to hydrate + develop well
1225 ASW-78 complete, move to ASW-71
1255 Break for lunch
1340 Resume ASW-71
1440 ASW-71 set, sand, + seal; allow bentonite to hydrate + develop well
1535 ASW-71 complete, ~~move to~~ ZM clean up and secure area
1615 ZM ~~tdrillers~~ leave site

Plans/Future Activities

Signature/Date 1/27/17

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/27/17
Task No.:

Work Performed

Well Installation:	X	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

0640: Arrive on site. Dave Sizemore (DS) conducts H&S meeting
0700 - Begin collecting DTW measurements from wells installed yesterday
0730 - ASW058 complete (grouted) - Screened 55-52 ft BLS due to SAND/CLAY with.
0730 - Begin ASW106
0855 - Complete ASW106 - screened 55-57 ft BLS to avoid clay/sand layer & target sandy layer (present to 56.5 ft BLS)
0905 - Begin ASW105
1025 - Complete ASW105 - screened 55-57 ft BLS to avoid clay/sand layer and target sandy layer above 56.2' BLS
1035 - Begin ASW070
1155 - Complete ASW070. Screened 56-58 ft BLS due to CLAY/SAND around 58.5' BLS
1205 - Begin ASW069
1245 - Break for lunch while bentonite hydrates
1355 - Complete ASW069
1405 - Begin ASW040 (MB)
1535 - Complete ASW040. Screened 56'-58' BLS to intersect SAND @ 56.5' & 57.5'-58.0' (also, laminated clay layers did not have a lot of CLAY).
1540 - Drillers clean up site. Remove mud line from rig - it is fraying
1600 - Off site

Plans/Future Activities

1/27/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection
Date: 30 Jan. 2017
Task No.:

Work Performed

Well Installation: ✓ ASW039, ASW029, ASW038 (3 AS wells)
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

06:00 – W. Morrison (WM) [Geosyntec] arrived at Tampa office. Mob from Tampa office to Kennedy Space Center.
08:30 – WM arrived at LC39B badging office. Picked up overlay badge. Mob inside pad.
08:40 – WM arrived onsite. D. Sizemore (DS), Ron Kent (RK), and J. Langenbach (JL) [Geosyntec] onsite.
08:45 – Discuss air sparge (AS) well installation scope of work and procedures.
09:15 – GPI crews arrive onsite.
09:20 – GPI setting up for AS well installation – unloading equipment/supplies.
10:00 – DS conducted health and safety meeting.
10:30 – Begin drilling ASW039. Previously post-holed to 5 ft BLS.
11:00 – JL left the site
11:22 – Began developing ASW039.
11:34 – Finished developing ASW039. Recovered ~12 gal. Clear.
11:42 – Grouting annulus around ASW039.
12:00 – Complete ASW039
12:10 – Began drilling ASW029. Previously post-holed to 5 ft BLS.

Plans/Future Activities

12:30 – Break for lunch.
13:30 – GPI back onsite. Continue installing ASW029.
14:15 – ASW029 screened 57–59 ft BLS as proposed (SAND).
14:35 – Bentonite began hydrating at ASW029.
14:58 – Began developing ASW029.

1/30/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection
Date: 30 Jan. 2017
Task No.:

Work Performed

Well Installation: ✓
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

15:08 – Finished developing ASW029 Recovered ~10 gal. Clear.
15:10 – Grouting annulus around ASW029
15:20 – Completed ASW029.
15:25 – Began drilling ASW038. Previously post-holed to 5 ft BLS. ASW038 screened 57–59 ft BLS as proposed.
16:20 ~~14:20~~ – Began developing ASW038.
16:30 ~~14:30~~ – Finished developing ASW038. Recovered ~10 gal. Clear.
16:40 ~~14:40~~ – Grouting annulus around ASW088.
16:45 ~~14:45~~ – WM returned overlay badges to LC39B badging office.
16:55 ~~14:55~~ – WM left the site. No health and safety incidents occurred.

Plans/Future Activities

1/30/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/30/17
Task No.:

Work Performed

Well Installation: X ASW-64, ASW-101, ASW-102
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0830: Arrive on site. Meet w/ Dave Sizemore (DS), Whitney Morrison (WM), & Jim Langenbach (JL).
0915: Drillers arrive on site and begin setting up. DS conducted health & safety brief ing.
1015: Drillers set up at ASW-64.
1145: ASW-64 set, sand, & seal complete; allow bentonite to hydrate & develop well. JL left site. Drillers had maintenance issue w/ rig.
1215: ASW-64 complete. Break for lunch.
1330: Arrived back on site. Drillers set up at ASW-101. Switched ~~[illegible]~~ to short stroke rig due to maintenance issue w/ long stroke rig.
1400: Driller began to post hole ASW-102. Original location was on the berm. Moved location 2 ft northwest down berm to avoid problems with drilling on incline. ASW-101 moved 2 ft southwest so rig would not damage nearby junction box.
1500: ASW-101 set, sand, & seal complete; allow bentonite to hydrate & develop well.
1545: ASW-101 complete; move to ASW-102.
1630: ASW-102 set and sand complete; wait to seal, hydrate, and develop tomorrow
1645: Leave site.

Plans/Future Activities

NC

Ben [illegible] 1/30/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 31 Jan. 2017
Task No.:

Work Performed

Well Installation: ✓ ASW067, ASW068,
Soil Borings: ASW075, ASW107,
DPT: ASW108, ASW109
Well Inventory: (6 AS wells)
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

06:15 – W. Morrison (WM) [Geosyntec] arrived at LC39B badging office.
06:30 – WM picked up overlay badge.
06:30 – R. Kent and D. Sizemore (DS) [Geosyntec] and GPI crews arrived at LC39B badging office. Picked up overlay badges.
06:40 – DS conducted health and safety meeting.
06:50 – Mob inside pad.
07:00 – GPI setting up on ASW067.
07:10 – GPI began drilling ASW067. Previously post-holed to 5 ft BLS.
08:00 – ASW067 screened 57-59 ft BLS as proposed.
08:12 – Began developing ASW067.
08:24 – Finished developing ASW067. Recovered ~12 gal. Clear.
08:32 – Grouting annulus around ASW067.
08:45 – Completed ASW067.
08:50 – Began drilling ASW068. Post-holed to 5 ft BLS.
09:00 – Mike Deliz (MD) [NASA Project manager] onsite.
09:30 – ASW068 screened 57-59 ft BLS as proposed.
09:37 – Began developing ASW068. ~~Recovered~~ (RW)
09:49 – Finished developing ASW068. Recovered ~12 gal. Clear.

Plans/Future Activities (RW)

10:00 – MD left the site.
10:00 – Grouting annulus around ASW068.
10:10 – Completed ASW068.
10:15 – Began drilling ASW075. Post-holed to 5 ft BLS.
10:50 – ASW075 screened 57 to 59 ft BLS as proposed.
11:06 – Began developing ASW075.

1/31/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection
Date: 31 Jan. 2017
Task No.:

Work Performed

Well Installation:	✓	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

11:18 – Finished developing ASW075. Recovered ~12 gal. Clear.
11:30 – Grouting annulus around ASW075.
11:40 – Completed ASW075. WM breaks for lunch.
GPI drilling ASW107. Previously post-holed to 5 ft BLS.
ASW107 screened 57–59 ft BLS as proposed.
12:35 – Began developing ASW107.
12:47 – Finished developing ASW107. Recovered ~12 gal. Clear.
13:32 – Grouting annulus around ASW107.
13:48 – Completed ASW107.
13:55 – Began drilling ASW108. Previously post-holed to 5 ft BLS.
14:30 – ASW108 screened from 57–59 ft BLS as proposed.
14:38 – Began developing ASW108.
14:48 – Finished developing ASW108. Recovered ~10 gal. Clear.
15:00 – Grouting annulus around ASW108.
15:15 – Completed ASW108.
15:20 – Began drilling ASW109. ~~Previously~~ (MW) post-holed to 5 ft BLS earlier.
15:55 – ASW109 screened 57–59 ft BLS as proposed.
16:05 – Began developing ASW109.
16:18 – Finished developing ASW109. Recovered ~13 gal. Clear.

~~Plans~~/Future Activities (MW)

16:25 – Grouting annulus around ASW109.
16:37 – Completed ASW109.
16:45 – WM returned overlay badges to LC39B badging office.
16:55 – WM left the site. No health and safety incidents occurred.

1/31/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1/31/17
Task No.:

Work Performed

Well Installation: X ASW-103, 104, 145, 146, 147
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0545: Ron Kent (RK) leaves Titusville office in field vehicle.
0615: Arrive at site. Meet with Whitney Morrison (WM) and Dave Sizemore (DS).
0630: Drillers arrive at site. DS conducts health and safety briefing.
0645: Seal and develop ASW-102.
0800: ASW-102 complete; move to ASW-103.
0845: ASW-103 set, sand, and seal complete; allow bentonite to hydrate & develop well.
0900: DS and NASA RPM Mike Deliz briefly visit & talk about progress for the day & then depart.
0945: ASW-103 complete; move to ASW-104.
1045: ASW-104 set, sand, and seal complete; allow bentonite to hydrate & develop well.
1115: ASW-104 complete; move to ASW-145.
1230: ASW-145 set, sand, and seal complete; allow bentonite to hydrate & develop well. Break for lunch.
1330: Return from lunch.
1345: ASW-145 complete; move to ASW-146.
1445: ASW-146 set, sand, and seal complete; allow bentonite to hydrate & develop well.
1530: Complete ASW-146; move to ASW-147.
1615: ASW-147 set, sand, and seal complete; allow bentonite to hydrate & develop well.
1645: ASW-147 complete; drillers leave site; RK leaves site.

Plans/Future Activities

RK

Per WM 1/31/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1 Feb. 2017
Task No.:

Work Performed

Well Installation:	✓ ASW110, ASW114,	Sampling Soil:	
Soil Borings:	ASW116, ASW115,	Sampling SW/Sediment:	
DPT:	ASW113, ASW112	Sampling Monitor Wells:	
Well Inventory:	(6 wells)	Sampling Hazardous Waste:	
Other:	AS	Sampling Drums:	

Observations/Issues of Concern

06:30 – W. Morrison (WM) [Geosyntec] arrived at LC39B badging office. Ron Kent (Geosyntec) and GPI crews at LC39B badging office. Picked up overlay badges.
06:35 – WM conducted health and safety meeting.
06:45 – Mob inside pad.
06:50 – GPI getting supplies from staging area.
07:05 – Began drilling ASW110. Post-holed to 5 ft BLS.
07:45 – ASW110 screened 57–59 ft BLS as proposed.
07:57 – Began developing ASW110.
08:12 – Finished developing ASW110. Recovered ~15 gal. Clear.
08:20 – Grouting annulus around ASW110.
08:30 – Completed ~~ASW08~~ (AW) ASW110.
08:35 – Began drilling ASW114. Post-holed to 5 ft BLS.
09:15 – ASW114 screened 56.5–58.5 ~~ft~~ (AW) ft BLS (Sandy CLAY @ 58.5 ft BLS)
09:27 – ~~0~~ (AW) Began developing ASW114.
09:39 – Finished developing ASW114. Recovered ~12 gal. Clear.
09:50 – Grouting annulus around ASW114.
10:00 – Completed ASW114.
10:05 – Began drilling ASW116. Post-holed to 5 ft BLS.

~~Plans~~/Future Activities (AW)

10:40 – ASW116 screened 56–58 ft BLS (Sandy CLAY @ ~~56.25~~ 56 (AW) 58.25 – 58.5 ft BLS)
10:53 – Began developing ASW116.
11:03 – Finished developing ASW116. Recovered ~10 gal. Clear.
11:14 – Grouting annulus around ASW116.

2/1/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 1 Feb. 2017
Task No.:

Work Performed

Well Installation:	✓	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

11:25 – Completed ASW116.
11:30 – Began drilling ASW115. Post-holed to 5 ft BLS.
12:15 – ASW115 screened 57-59 ft BLS as proposed.
12:24 – Began developing ASW115. Break for lunch while bentonite hydrates.
12:44 – Finished developing ASW115. Recovered ~20 gal. Clear.
13:20 – Grouting annulus ~~can~~ (lw) around ASW115.
13:35 – Completed ASW015.
13:40 – Began drilling ASW113. Post-holed to 5 ft BLS.
14:20 – ASW113 screened 57-59 ft BLS as proposed.
14:35 – Began developing ASW113.
14:47 – Finished developing ASW113. Recovered ~12 gal. Clear.
14:56 – Grouting annulus around ASW113.
15:05 – Completed ASW113.
15:10 – Began drilling ASW112. Post-holed to 5 ft BLS.
15:45 – ASW112 screened 57-59 ft BLS as proposed.
15:58 – Began developing ~~ASW113.~~ (lw) ASW112.
16:10 – Finished developing ASW112. Recovered ~12 gal. Clear.
16:20 – Grouting annulus around ASW112.
16:32 – Completed ~~ASW113.~~ (lw) ASW112.

Plans/Future Activities (lw)

16:40 – WM returned overlay badges to LC39B badging station.
16:50 – WM left the site. No health and safety incidents occurred.

WM

2/1/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/1/17
Task No.:

Work Performed

Well Installation: X ASW-148, 125, 126, 127, 128
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600: Ron Kent (RK) leaves Titusville office in field vehicle.
0630: Arrive at site. Drillers and Whitney Morrison (WM) arrive. WM conducts tailgate safety meeting.
0700: Drillers set up at ASW-148.
0815: ASW-148 set, sand, and seal complete; allow bentonite to hydrate and develop well.
0900: ASW-148 complete; move to ASW-125.
0945: ASW-125 set, sand, and seal complete; allow bentonite to hydrate and develop well.
1030: ASW-125 complete; move to ASW-126.
1045: Driller hit [redacted] pipe while post hole digging on ASW-127. Moved ASW-127 2' northwest.
1115: ASW-126 set, sand, and seal complete; allow bentonite to hydrate and develop well.
1130: Break for lunch
1215: Return from lunch. Begin grouting ASW-126.
1230: ASW-126 complete; move to ASW-127.
1315: ASW-127 set, sand, and seal complete; allow bentonite to hydrate & develop well.
1400: ASW-127 complete; move to ASW-128.
1500: ASW-128 set, sand, and seal complete; allow bentonite to hydrate & develop well.
1545: ASW-128 complete; drillers begin moving rig/equipment to opposite side of berm.
1645: Drillers leave site. RK leaves site.

RK

Plans/Future Activities

2/1/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2 Feb. 2017
Task No.:

Work Performed

Well Installation:	✓ ASW111, ASW084,	Sampling Soil:	
Soil Borings:	ASW074, ASW073,	Sampling SW/Sediment:	
DPT:	ASW066, ASW037	Sampling Monitor Wells:	
Well Inventory:	(6 AS wells)	Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

06:30 – W. Morrison (WM) [Geosyntec] arrived at LC39B badging office. Ron Kent (Geosyntec) at LC39B badging office. GPI crews and D. Sizemore (DS) [Geosyntec] arrived at LC39B badging office. Picked up overlay badges.
06:35 – DS conducted health and safety meeting.
06:40 ~~06:45~~ (DW) Mob inside pad.
06:45 – GPI getting supplies from staging area.
07:10 – Began drilling ASW111. Post-holed to 5 ft BLS.
07:50 – ASW111 screened 57-59 ft BLS as proposed.
08:02 – Began developing ASW111.
08:12 – Finished developing ASW111. Recovered ~10 gal. Clear.
08:22 – Grouting annulus around ASW111.
08:32 – Completed ASW111.
08:37 – Began drilling ASW084. Post-holed to 5 ft BLS.
09:15 – ASW084 screened 57-59 ft BLS as proposed.
09:27 – Began developing ASW084.
09:37 – Finished developing ASW084. Recovered ~10 gal. Clear.
09:47 – Grouting annulus around ASW084.
09:57 – Completed ASW084.

~~Plans/Future Activities~~ (DW)

10:02 – Began drilling ASW074. Post-holed to 5 ft BLS.
10:40 – ASW074 screened 57-59 ft BLS as proposed.
10:53 – Began developing ASW074.
11:07 – Finished developing ASW074. Recovered ~14 gal. Clear.
11:14 – Grouting annulus around ASW074.

2/2/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection
Date: 2 Feb. 2017
Task No.:

Work Performed

Well Installation:	✓	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

11:24 – Completed ASW074.
11:30 – Began drilling ASW073. Post-holed to 5 ft BLS.
12:15 – ASW073 ~~screened~~ (MW) screened 57–59 ft BLS as proposed.
12:10 – Romero (NASA safety) stopped by the site. Satisfied with work conditions. Working safely. (MW)
12:29 – Began developing ASW073. Break for lunch while bentonite hydrates.
13:19 – Finished developing ASW073. Recovered ~50 gal. Clear.
13:30 – Grouting annulus around ASW073.
13:43 – Completed ASW073. Moved ~3 ft north to avoid utility line.
13:48 – Began drilling ASW066. ~~Post-holed~~ (MW) Post-holed to 5 ft BLS.
14:20 – ASW066 screened 57–59 ft BLS as proposed.
14:31 – Began developing ASW066.
14:43 – Finished developing ASW066. Recovered ~12 gal. Clear.
14:51 – Grouting annulus around ASW066.
15:01 – Completed ASW066.
15:06 – Began drilling ~~ASW066.~~ (MW) ASW037. Post-holed to 5 ft BLS.
15:50 – ASW037 screened 57–59 ft BLS as proposed.
16:03 (MW) ~~14:03~~ – Began developing ASW037.
16:13 – Finished developing ASW037. Recovered ~10 gal. Clear.

~~Plans/Future Activities~~ (MW)

16:23 – Grouting annulus around ASW037.
16:35 – Completed ASW037.
16:45 – WM returned overlay badges to LC39B badging station.
16:55 – WM left the site. No health and safety incidents occurred.

2/2/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/2/17
Task No.:

Work Performed

Well Installation: X ASW-206, 205, 204, 203, 207, 202
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600: Ron Kent (RK) leaves Titusville office in Geosyntec field vehicle.
0630: RK arrives on site. Dave Sizemore (DS), Whitney Morrison (WM), and drillers arrive. DS conducts tailgate safety meeting.
0645: Drillers ~~RK~~ continue moving rig + equipment to opposite side of berm. 10-stroke rig was repaired on 2/1/17. Drillers begin using 10-stroke rig instead of short-stroke rig.
0715: Set up at ASW-206.
0830: ASW-206 set, sand, and seal complete; allow bentonite to RK hydrate & develop well.
0845: ASW-204 moved 3' east to avoid utility.
0915: ASW-206 complete; move to ASW-205.
1000: ASW-205 set, sand, and seal complete; allow bentonite to hydrate & develop well.
1015: ASW-203 moved 3' east to avoid utilities.
1030: ASW-205 complete; move to ASW-204.
1130: ASW-204 set, sand, and seal complete; allow bentonite to hydrate & develop well.
1200: ASW-204 complete; move to ASW-203.
1300: ASW-203 set, sand, and seal complete; allow bentonite to hydrate & develop well; break for lunch.
1345: Return from lunch; begin grouting ASW-203; move ASW-200 5' east to avoid utilities.
1400: ASW-203 complete; move to ASW-207.
1500: ASW-207 set, sand, and seal complete; allow bentonite to hydrate & develop well.

Plans/Future Activities

RK

RK 2/2/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/2/17
Task No.:

Work Performed

Well Installation: X ASW-206, 205, 204, 203, 207, 202
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1530: ASW-207 complete; move to ASW-202.
1630: ASW-202 set, sand, and seal complete; allow bentonite to hydrate & develop well.
1645: Leave site.

Plans/Future Activities

RK

Signature/Date 2/2/17

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 3 Feb. 2017
Task No.:

Work Performed

Well Installation: ✓ ASW065, ASW072,
Soil Borings: ASW079, ASW080,
DPT: ASW083 (5 AS wells)
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

06:30 – W. Morrison (WM) [Geosyntec] arrived at LC39B badging office. Ron Kent and D. Sizemore (DS) [Geosyntec] at LC39B badging office. GPI crews arrived at LC39B badging office. Picked up overlay badges.
06:35 – DS conducted health and safety meeting.
06:45 – Mob inside pad.
06:50 – GPI getting supplies from staging area.
07:08 – Began drilling ASW065. Post-holed to 5 ft BLS.
07:45 – ASW065 screened 57-59 ft BLS as proposed. (WM)
07:56 – Began developing ASW065. GPI topping off boreholes with grout of AS wells completed this week to ~2.5 ft BLS.
08:06 – Finished developing ASW065. Recovered ~10 gal. Clear.
08:18 ~~08:18~~ (WM) – Grouting annulus around ASW065.
08:28 – Completed ASW065.
08:33 – Began drilling ASW072. Post-holed to 5 ft BLS.
09:05 – ASW072 screened 57-59 ft BLS as proposed.
08:45 – Mike Deliz (NASA project manager) stopped by the site. (WM)
09:16 – Began developing ASW072.
09:26 – Finished developing ASW072. Recovered ~10 gal. Clear.
09:38 ~~09:36~~ (WM) – Grouting annulus around ASW072.

Plans/Future Activities (WM)

09:45 – Mike Deliz left the site.
09:48 – Completed ASW072.
09:53 – Began drilling ASW079. Post-holed to 5 ft BLS.
10:25 – ASW079 screened 57-59 ft BLS as proposed.
10:36 – Began developing ASW079.
10:46 – Finished developing ASW079. Recovered ~10 gal. Clear.

2/3/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 3 Feb. 2017
Task No.:

Work Performed

Well Installation:	✓	Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:		Sampling Drums:	

Observations/Issues of Concern

10:58 – Grouting annulus around ASW079.
11:08 – Completed ASW079.
11:13 – Began drilling ASW080. Post-holed to 5 ft BLS.
11:50 – ASW080 screened 57–59 ft BLS as proposed.
12:01 – Began developing ASW080. Break for lunch while bentonite hydrates.
12:21 – Finished developing ASW080. Recovered ~20 gal. Clear
13:02 – Grouting annulus around ASW080.
13:14 – Completed ASW080.
13:19 – Began ~~AS~~ (m) drilling ASW083. Post-holed to 5 ft BLS.
13:50 – ASW083 screened 57–59 ft BLS as proposed.
14:03 – Began developing ASW083.
14:15 – Finished developing ASW083. Recovered ~12 gal. Clear
14:32 – Grouting annulus around ASW083.
14:45 – Completed ASW083.
14:50 – GPI topping off boreholes of AS wells with grout.
15:15 – WM returned overlay badge to LC39B badging station.
15:20 – WM left the site. No health and safety incidents occurred.

Plans/Future Activities

(m)

2/3/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/3/17
Task No.:

Work Performed

Well Installation: ASW-195, 200, 201, 199
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0600: Leave office in Geosyntec field vehicle.
0630: Arrive on site. Dave Sizemore (DS), Whitney Morrison (WM), & drillers arrive. DS conducts tailgate safety meeting.
0700: Begin grouting ASW-202.
0730: ASW-202 complete; move to ASW-195.
0815: Moved ASW-198 2' west to avoid utilities. Moved ASW-199 5' west to avoid utilities.
0830: >1.5' of clay is ASW-195. Changed TD from 60' to 59' after speaking w/ DS.
0900: ASW-195 set, sand, and seal complete; allow bentonite to hydrate and develop well.
0915: Mike Deliz arrives on site, asks about progress, takes photos, & departs.
0930: ASW-195 complete; move to ASW-200.
1045: ASW-200 set, sand and seal complete; allow bentonite to hydrate & develop well.
1115: ASW-200 complete; move to ASW-201.
1245: ASW-201 set, sand, and seal complete; allow bentonite to hydrate & develop well. Break for lunch.
1330: Return from lunch; begin grouting ASW-201.
1400: ASW-201 complete; move to ASW-199.
1415: ASW-199 set, sand, & seal complete; allow bentonite to hydrate & develop well.
1445: ASW-199 complete; leave site.

Plans/Future Activities

RK

2/3/17
Signature/Date

CCIIS

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection (GWP)
Date: 2/6/17
Task No.: **

Work Performed

Well Installation: ASW0198, 0196, 0197, 0191
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

5:15 Alexis Johnson (AJ) leaves Jacksonville for KSC
7:45 arrive @ badging station, meet Alex Warzinski (AW), pick up badge, move to site.
8:15 pick up badge overlays @ pad leader office + meet Dave Sizemore (DS) @ LC39B to discuss scope of work.
9:30 GWP on site, DS conducts H+S briefing
9:40 begin setup for drilling starting w/ASW0198
9:55 begin sonic drilling activities
10:50 ASW0198 set, filter + seal complete, begin bentonite hydration + development
11:20 ASW0198 complete, move to ASW0196.
11:35 break for lunch.
12:45 resume drilling @ ASW0196.
13:35 ASW0196 set, filter + seal complete, begin bentonite hydration + development.
14:10 ASW0196 complete, move to ASW0197, shift approx 4' toward tunnel to avoid utilities.
15:05 ASW0197 set, filter + seal complete, begin bentonite hydration + development.

~~Plans/Future Activities~~

15:30 ASW0197 complete, move to ASW0191
16:30 ASW0191 set, filter + seal complete, begin development + bentonite hydration.
16:45 development complete. will finish grout tomorrow GWP, AJ off site, no H+S issues noted

Allyn J 2/6/17

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/6/17
Task No.: —

Work Performed

Well Installation: Sonic installs
Soil Borings: Bottom of well boring
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0745 Alex Warzinski (AW) mobs from Titusville office to ITSC badging station in company F-150 to meet Alexis (Geosyntec Jacksonville).
0815 Check in with LC 39B pad leader.
0830 meet Dave Sizemore (DS) on site
0900 Both GPE crews on site.
0930 H&S Tailgate led by DS w/ both GPE crews
0950 Billy + Preston setting up on ASW 131. Location previously post-holed. Ben also assisting crew
1048 - 1058 ASW 131 installed; 10 min development after filter pack + bentonite seal install (Screened ~57-59' bgs)
1109 Tremie grout ASW 131
1120 Finish tooling down + mob rig to ASW 135 Planning to set up rig then go to lunch
1130 AW, Billy, Ben, and Preston (GPE) off site for lunch.
1245 All back from lunch. Begin drilling ASW 135 (ASW 135 post-holed during ASW 131 drilling).
1339 Filter pack + bentonite seal installed; begin purge of ASW 135 (ASW 136 & 139 post-holed during ASW 135 drilling)

Plans/Future Activities

2/6/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/6/17
Task No.:

Work Performed

Well Installation: Some installs
Soil Borings: Bottom of well boring
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1400 Tremie grout ASW 135
1415 Begin drilling ASW 136
1430 Begin post-holing ASW 117. DS documenting drill activities in ASW installation area (video camera).
1503 ASW136 filter pack + seal set; begin development ASW 136 screened 57-59 ft BLS.
1513 Finish developing ASW 136.
1523 Tremie grout ASW 136
1535 Mob equipment to ASW139.
1540 Begin drilling ASW 139
1630 Set ASW 139 w/ filter pack + seal; begin development ASW139 screened ~57-59 ft BLS
1640 ASW 139 left in hole w/o grout
1645 Sign out @ pad leader's office
1650 AW mob back to office ~~in~~ ~~EH50~~

Plans/Future Activities

Grout ASW 139. Tag total depth and depth to water of wells installed today.

AW 2/6/17
Signature/Date

CONTRACTOR

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection (GWP)

Date: 2/7/17
Task No.: ##.

Work Performed

Well Installation: ABSW0179, 0176, 0177, 0170, 0169
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:30 AS on site, pick up badge overlay + meet AW, BS, GWP for H+S briefing.
6:50 mobs to site + resume drilling activities w/ ABSW0191 grout.
7:30 ABSW0191 Complete, move to ABSW0179
8:20 ABSW0179 Set w/ screen 55-57' to avoid clay layer observed, filter + seal installed, begin bentonite hydration + development.
9:00 ABSW0179 Complete, move to ABSW0176
10:05 ABSW0176 set, filter + seal installed, begin bentonite hydration + development.
10:40 ABSW0176 complete, move to ABSW0177
11:30 ABSW0177 set, filter + seal installed, begin bentonite hydration + development
11:40 development complete, break for lunch.
12:20 resume drilling activities w/ grout @ ABSW0177, lightning phase 1 in effect.
12:50 ABSW0177 Complete, move to ABSW0170
13:45 ABSW0170 set, filter + seal installed, begin bentonite hydration + development
14:30 ABSW0170 complete, begins raining, lightning phase 2 in effect → stand down.
15:00 return to lightning phase 1, resume drilling w/ ABSW0169.
16:05 ABSW0169 set, filter + seal installed, begin bentonite hydration + development.
16:50 ABSW0169 Complete, AS, GWP off site, no H+S issues noted.

Plans/Future Activities

AS

AS 2/7/17

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/7/17
Task No.:

Work Performed

Well Installation: Air sparge wells
Soil Borings: 10' @ bottom of boring
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0630 Alex Warzinski (AW) @ LC39B ~~for~~ @ yard leader office after mobilizing from Titusville office in company F-150. Both GPI crews on site (5 drillers / assistants).
0640 H&S Tailgate led by Dave Sizemore (D.S.).
0650 Onsite. Grout ASW 139 and collect depth to water and total depth at ASWs 131, 135, and 136.
0730 Begin drilling ASW 117 (post holed yesterday). ASW 119 being post holed during drilling.
0806 ASW 117 filter pack + seal set. well screened ~57-59' BGS; begin development.
0816 End ASW 117 development
0826 Begin grouting ASW 117 (tremie).
0845 Begin drilling ASW 118 (previously post holed). Post hole digging ASW 120
0933 Begin ASW 118 development
0953 Tremie grout ASW 118 (development ended 0943).
1012 Begin drilling ASW 19 (previously post holed).
1035 Post hole digging ASW 124

Plans/Future Activities

AW

AW 2/7/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/7/17
Task No.: ~

Work Performed

Well Installation: Air sparge wells (sonic install)
Soil Borings: Bottom 10' of well borings
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1059 Develop ASW 119 after setting filter pack + seal
1109 Stop ASW 119 development.
1123 Tremie grout ASW 119
1140 Begin drilling ASW 120
1220 Develop ASW 120. ASW 120 screened ~ 56 - 58 ft BLS to avoid sands w/ high clay content that may prevent sparging effectively.
1230 Finish developing ASW 120 and break for lunch (A.W. & Billy, Ben, and Preston [GPI]).
1300 GPI crew back from lunch. Prep to grout ASW 120.
1325 Set up rig to begin drilling ASW 124. Post hole ASW 123
1416 ASW 124 filter pack + seal set; begin development. ASW 124 screened ~ 56 - 58 ft BLS to place screen above layer of sandy CLAY.
1426 Stop ASW 124 development.
1430 Phase II lightning warning. Crew in vehicles.
1500 Phase II terminated. Crews back to work. Begin grouting ASW 124
1515 Prepping to drill @ ASW 123.

Plans/Future Activities

2/7/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/7/17
Task No.:

Work Performed

Well Installation: Air sparge wells (Sonic)
Soil Borings: Bottom 10' of borehole
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1608 Begin developing ASW123 after setting filter pack + seal. ASW123 screened ~57-59 ft BLS.
1628 Begin grouting ASW123.
1640 Cleaning up site for departure.
1650 Check out @ Pad lead's office.

Plans/Future Activities

Tag water levels & total depth of wells installed today.

2/7/17
Signature/Date

COLIS

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/8/17
Task No.: **

Work Performed

Well Installation: ABW0175, 0178, 0187, 0186,
Soil Borings: 0185, 0184
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:25 AJ on site, pick up overlay badge + meet Alex, Dave, GWP for HS briefing.
6:45 mob to site and resume drilling activities w/ ABW0175
7:55 ABW0175 Slt, filter + seal installed, begin bentonite hydration + development.
8:45 ABW0175 complete, move to ABW0178.
9:35 ABW0178 Cone (AS) Set, filter + seal installed, begin bentonite hydration + development.
10:15 ABW0178 complete, move to ABW0187
11:10 ABW0187 Set, filter + seal installed, begin bentonite hydration + development.
* note: ABW0186 and 0185 will be moved ~ 3' toward tunnel to avoid utilities
12:00 ABW0187 complete. Break for lunch.
12:40 resume drilling w/ ABW0186.
13:30 ABW0186 Set, filter + seal installed, begin bentonite hydration + development
14:05 ABW0186 complete, move to ABW0185
*note: ABW0184 moved ~ 3' away from tunnel to avoid utilities
" " for ABW0183, moved away from launch pad.
14:55 ABW0185 Set, filter + seal installed, begin bentonite hydration + development.
15:30 ABW0185 complete, move to ABW0184
16:35 ABW0184 Set, filter + seal installed, begin bentonite hydration + development.

~~Plans/Future Activities~~

16:45 ABW0184 development complete. will finish grout tomorrow
16:55 AS, GWP off site. no HS issues noted.

2/8/17

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/8/17
Task No.:

Work Performed

Well Installation: Asparge wells (sonic)
Soil Borings: 10' @ bottom of borehole
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0615 Alex Warmoth (AW) on site after mob from Titusville office in company F-150.
0630 Both geo drill crews, Alex B (Geosyntec), and Dave Siemens (D.S.) on site + checked in w/ pad lead.
0640 H&S Tailgate led by D.S. Focus on slipping hazards.
0700 Begin drilling ASW122 (post-holed yesterday)
Development water tote being pumped into IDW frac tank.
0758 Begin developing ASW122 after setting filter pack and seal
ASW122 screened ~ 56-58 ft BGS to keep screen out of clayey SAND's (presumed poor sparge region).
0718 Grout (tremie) ASW 122
0835 Drilling ASW121 (previously post-holed)
0918 Developing ASW121 after setting filter pack and seal.
ASW 121 screened ~ 57-59 ft BGS
0928 Grouting ASW 121
0950 Begin drilling ASW144 (previously post holed)
1038 Develop ASW144 after setting seal + filter pack
ASW 144 screened ~ 57-59 ft BGS.

Plans/Future Activities

AM

2/8/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/8/17
Task No.: —

Work Performed

Well Installation: Air Sparge wells (sonic)
Soil Borings: 10' @ bottom of borehole
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1058 Grout ASW 144
1110 Begin drilling ASW 142 (previously post-holed)
1158 Develop ASW 142 after setting filter pack + seal
ASW 142 screened ~57-59 ft BLS
1208 Stop ASW142 development. A.W. off site for lunch
1240 A.W. back on site. Crew grouting ASW142
1300 Rig having problems; working to diagnose. Engine oil warnings. Retreating rig in the meantime.
1305 Rig problem resolved; continuing work.
1310 Continued rig problems. Apparently not resolved.
1315 Problem resolved after geoprobe engine adjustments. Mob to ASW138
1320 Begin drilling ASW 138 (previously post holed).
1359 Develop ASW 138 after setting filter pack + seal. well screened ~57-59 ft BLS.
1419 Grout ASW138.
1430 Begin drilling ASW134 (previously post-holed).
1515 Begin purging ASW 134 after setting filter pack and seal
ASW 134 screened ~57-59 ft BLS.
1525 End development of ASW 134

Plans/Future Activities

AW

2/8/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/8/17
Task No.: —

Work Performed

Well Installation: Air Sparge well (Sonic)
Soil Borings: 10' bottom of borehole
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1535 Grouting ASW134
1550 Begin drilling ASW130 (previously post-hoced)
1632 Develop ASW130 after setting filter pack and seal.
ASW130 screened ~57'-59 ft BGS. Clean up site.
1642 Stop developing ASW130.
1645 Check out @ Pad lead's office. Off site.

Plans/Future Activities

DTW and total depth @ wells installed today
GPS remaining locations S of escape tunnel.
Grout ASW130.

2/8/17
Signature/Date

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DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection (GWP)
Date: 2/9/17
Task No.: ~~7~~ 8

Work Performed

Well Installation: ASW0183, ~~0182~~ (AS), 0181, 0160
Soil Borings: 0181, 0182.
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:20 AS on site, pick up overnay badge. meet w/ Alex, Dave, GWP for HTS tailgate.
6:45 mob to LC39B and resume drilling activities w/ grout @ ASW 0184
7:30 ASW0149 and 0180 will need to be shifted off tunnel slope, Dave notes it is okay to bring 0149 to flat area closer to pad (15' SE of original location)
7:40 ASW0184 complete, move to ASW0183.
8:55 ASW0183 set, filter + seal installed, begin bentonite hydration + development
9:15 Ben Copplenger on site to mark remaining well locations.
9:40 ASW0183 Complete, move to ASW0182
10:00 rig continuously hits large debris | possibly rebar @ ASW0182 → approx 5' bls., will move to ASW0181 and re-evaluate 0182 location, discussed w/ Dave, will shift approx 10 ft away from tunnel., ASW0155 shifted to toe of retention pond berm.
10:40 188 will shift ~5' toward tunnel to avoid utilities.
10:55 ASW0181 set, filter and seal installed, begin bentonite hydration + development. ASW0180 moved to outside retention pond berm
11:45 ASW0181 Complete. move to ASW0160
12:00 GWP's bobcat will not go into gear → trying to repair safety belt locksensor
12:30 unable to repair, borrowing other crews bobcat.
12:35 ~~begin ASW0160~~ (AS) break for lunch
13:00 resume drilling w/ ASW0160

Plans/Future Activities

13:50 ASW0160 Set, filter + seal installed, begin bentonite hydration + development.
14:30 ASW0160 Complete, move to ASW0161
15:25 ASW0161 Set, filter + seal installed, begin bentonite hydration + development.

Alex Dyer 2/9/17

CDM Smith

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/9/17
Task No.: ***

Work Performed

Well Installation: ASW0183, 0181, 0160, 0161, 0162
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

16:10 ASW0161 complete. move equipment to ASW0162.
16:35 ASW0162 @ 50'bls, begin packing up for night, will complete tomorrow.
16:40 GWP off site.
16:45 AS off site.

AS

Plans/Future Activities

AS

AS 2/9/17

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/9/17
Task No.: —

Work Performed

Well Installation: Air Sparge Wells (sonic)
Soil Borings: 10' Bottom of borehole
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0620 Alex Warzinski (AW) sign in at Pad lead's office after mob from Tinsville office in company F-150.
0635 Both GPE crews + Alexis (Geosyntec) on site. H&S Tailgate led by Dave Sizemore (D.S.). Focus on working well-rested. Discuss redrilling ASW02 due to damage noticed yesterday.
0700 Grout ASW130. Take ~~tw~~ DTW and total depth of wells installed yesterday.
0730 Begin drilling ASW129 (previously posthole).
0822 Begin developing ASW129 after setting filter pack + seal. ASW129 screened ~ 57 - 59 ft BLS
0832 Stop developing ASW129
0842 Grouting ASW129. [0900 Begin drilling ASW132 (previously posthole)]
0920 Ben Coppenger (B.C.) on site to work remaining locations. Minor rig electrical issues.
0925 Rig speed control switch replaced; continue drilling.
1003 Begin developing ASW132.
1013 Stop developing ASW132.

Plans/Future Activities

DPT

2/9/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/9/17
Task No.: —

Work Performed

Well Installation: Air Sparge wells (soil)
Soil Borings: 10' Bottom of borehole
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1023 Grouting ASW132 (trench).
1045 Begin drilling ASW132
1136 Begin developing ASW132 after setting filter pack + seal
ASW132 screened ~57-59 ft BGS
1146 Stop developing ASW132
1156 Grout ASW132
1215 Begin drilling ASW140 (previously post holed)
1300 Begin developing ASW140 (~57-59 ft BGS) after placing filter + seal
1310 Stop ASW140 development. Crew breaking for lunch on site.
1340 Crew back from lunch. Grouting ASW140.
1400 Begin drilling ASW137 (previously post holed).
1449 ~~1429~~ Begin ASW137 development after setting filter + seal
ASW137 screened ~57 to 59 ft BGS
1459 Stop ASW137 development
1509 Grout ASW137
1525 Begin drilling ASW141 (previously post holed)
1608 Begin developing ASW141 after setting filter + seal (screened ~57-59 ft BGS)
1618 Stop developing ASW141
1628 Grout ASW141 [1640 Sign out @ pad lead. Off site]

Plans/Future Activities

Tag DTW + total depth of wells installed today.

2/9/17
Signature/Date

CCIIS

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection (GWP).

Date: 2/10/17
Task No.: 4st.

Work Performed

Well Installation: ASW0162, 0214, 0219, ~~0220~~ (AJ)
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

6:20 AS on site, Alex, Dave on site, pick up overlay badges.
6:40 GWP onsite, Dave conducts HAS briefing, will be off-site by 9:00 for pad closure.
6:50 mob to pad area, resume drilling w/ ASW0162
7:45 ASW0162 set, filter + seal installed, begin bentonite hydration + development.
8:15 ASW0162 Complete, move to 0214.
per Dave's instruction, markers for ASW192, 193, 194, ~~220~~ 221 moved to nearest grass location from road
9:15 ASW0214 set, filter + seal installed, begin bentonite hydration + development
9:45 ASW0214 Complete, move to ASW0219, ASW0220 moved to 5' radius from MW0013.
10:35 ASW0219 set, filter + seal installed, begin bentonite hydration + development
11:20 ASW0219 complete. begin packing up for weekend
11:40 GWP off site.
12:00 AS off site.

(AJ)

Plans/Future Activities

Alex Jr 2/10/17.

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/10/17
Task No.:

Work Performed

Well Installation: Air Sparge Wells (Sonic)
Soil Borings: 10' @ bottom of borehole
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0620 Arik Warzinski (A.W.) check in @ pad lead's office after MOB from office in company F-150

0630 Dave Sizemore (D.S.) and both GPI crews on site. H&S tailgate focused on complacency. Pad closing @ 1230 today for Pad A testing. Plan to top grout in holes and complete a few wells.

0700 Begin drilling ASW143 (previously posthole). Mark stakes of locations w/ ~2.5' BLS grout. Top off grout in any that are too low

0751 Develop ASW143 (~57-59' BLS screen) after setting filter + seal

0801 Stop developing ASW143

0811 Grout ASW143

0840 posthole ASW188 (S of escape time)

0850 Begin drilling ASW188.

0941 Begin developing ASW188 (screened ~57-59 ABLS) after setting filter and seal. TCN crew NAST PM wants us off site @ 1145

0951 Stop developing ASW188

1001 Grout ASW188

~~1010~~ 1010 Begin drilling ASW189 (previously post holed)

Plans/Future Activities

AW

AW 2/10/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/10/17
Task No.: —

Work Performed

Well Installation: Air sparge wells (Sonic)
Soil Borings: 70' bottom of borehole
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1059 Start developing ASW189 (screened ~57-59 ft bgs) after setting filter + seal.
1109 Stop developing ASW189.
1119 Grout ASW189
1130 Clean up site + prep for departure.
Collect WL's + total depths from wells installed today.
1200 All off site prior to 1230 pad closure.

Plans/Future Activities

Continued well installs next week.

2/10/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/13/17
Task No.: ~~08~~ → (ASW)

Work Performed 220, 225, 229

Well Installation: ASW installation
Soil Borings: bottom 10' of borehole collected
DPT: —
Well Inventory: —
Other: Jake Crum (AJC)
Groundwater Protection JNC → GPI

Sampling Soil: —
Sampling SW/Sediment: —
Sampling Monitor Wells: —
Sampling Hazardous Waste: —
Sampling Drums: —

Observations/Issues of Concern

0815- AJC arrive @ Badging office, meet w/ Ben Copperger (BC, Geosyntec)
0830- Receive Badge, mob to LC39B location
0900 - Meet w/ BC & Dave Sizemore (DS, Geosyntec) & discuss Scope of work & Health & Safety for LC39B AS well Install GPI crew currently drilling @ ASW220
1000- GPI crew reaches target Depth (53 ft BLS @ ASW 220), no clay layer noted, well screen set @ 50-52 ft BLS bentonite seal is placed & well is developed for ≈ 10 min Note, Same well install procedure to be used on remaining wells
1045 - Set up and begin drilling @ ASW-225
1125 - Set well @ 50-~~52~~ ft BLS, hydrate bentonite, develop well
1215 - Break for lunch
1315 - Return from lunch set up on ASW-229
1420 - Set well @ 50-52 ft BLS, hydrate bentonite, develop well
1450 - Set up on ASW-226 & begin drilling activities
1600 - Set well @ 50-~~52~~ ft BLS, hydrate bentonite, develop well
1630 - GPI crew packs equipment, GPI crew & AJC offsite

Plans/Future Activities

(4) ASW completed, all to original target depth
continue ASW installation Tuesday Feb 14, 2017

2/13/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2-13-17
Task No.:

Work Performed

Well Installation: X ASW
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0720
- ~~0805~~ @TVL office Prep
- 0800 - Jake Crum (Geosyntec) @ TVL office - we mob to badging station to get Jake's Badge
- 0835 - 1 GSI driller has badging issues he is working out w/ Badging office - the rest of us (Geosyntec + GRI) mob to site + begin work
- ~~0900~~ 0940 - Begin ASW182
- 1100 - Finish ASW182, drillers set up on ASW156
- 1210 - Developed ASW156, Break for lunch
- 1320 - Resume work, resume ASW156 grouting
- 1345 - Set up on ASW157
- 1510 - Finished ASW157, set up on ASW163
- 1630 - Finished ASW163, drillers grout hole + set up on ASW158
- 1645 - Leave site + sign out at Pad B office

Plans/Future Activities

Note: See Well construction logs + Boring Logs for more details

2-13-17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/14/17
Task No.: —

Work Performed

Well Installation: Air Sparge Wells
Soil Borings: Bottom 10 feet of boring
DPT: —
Well Inventory: —
Other: —

Sampling Soil: —
Sampling SW/Sediment: —
Sampling Monitor Wells: —
Sampling Hazardous Waste: —
Sampling Drums: —

Jake Crum (AJC)

Observations/Issues of Concern

0620 - AJC arrive @ Pad B check in, sign in, collect blue badge
0630 - Meet with Ben Coppenger + Dave Sizemore (BC, DS, Geosyntec) and discuss scope
0640 - Meet with BC, DS, & GPI Crew (Thomas, Billy, Dave, Ben) and Discuss H&S (specific topic of hand protection)
0650 - AJC mob into LC39B area, GPI crew (Dave + Thomas) set up on ASW 222
0700 - Begin drilling activities @ ASW-222
0800 - ~~No substantial~~ (AJC) Target depth of ≈ 53 ft BLS achieved (@ ASW-222), no substantial clay materials noted in bottom 10 ft of borehole, well screen set @ 50'-52' BLS, well is developed @ ≈ 1.0 gpm for ≈ 10 minutes after bentonite seal is in place (hydration time of ≈ 20 minutes) Note all wells are to be installed following the above procedure
(AJC) ~~0825~~ 0840 - GPI crew sets up on ASW-223 and begin drilling, AJC collects DTW measurements + TD measurements of ASWs installed on 2/13/17
0925 - TD of 53 ft BLS achieved, well screen placed @ 50'-52' BLS well is developed + bentonite seal is hydrated (ASW-223)

Plans/Future Activities

AJC 2/14/17

2/14/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection (Thomas, Dave, Grumm)

Date: 2/14/17
Task No.: —

Work Performed

Well Installation: Airsparge well install
Soil Borings: Bottom 10 ft of Borehole collected
DPT: —
Well Inventory: —
Other:

Sampling Soil: —
Sampling SW/Sediment: —
Sampling Monitor Wells: —
Sampling Hazardous Waste: —
Sampling Drums: —

Jake Crum (AJC)

Observations/Issues of Concern

0945 - GPI crew set up on & begin drilling @ ASW-218
1030 - ASW-218 screen set @ 50'-52' BLS, well developed, Bentonite seal (20min)
1100 - GPI crew set up on & begin drilling @ ASW-217
1200 - ASW-217 screen set @ 50'-52' BLS, well developed, Bentonite seal (20min)
1215 - GPI crews break for lunch
1300 - Return from lunch, set up on and begin drilling @ ASW-212
1405 - ~~GPI~~ ASW-212 screen set @ 50'-52' BLS, well developed, seal hydrates (20min)
1430 - GPI set up on and begin drilling @ ASW-211
1530 - ASW-211 screen set @ 50'-52' BLS, well developed, Bentonite seal hydrate (20min)
1600 - GPI crew packs rig, tops some ~~D~~ ASW holes with grout.
1645 - GPI crew & Geosyntec Employees Check out of LC39B Area.

AJC 2/14/17

Plans/Future Activities

6 ASW completed to target depth
Continue ASW install activities ~~on~~ Wed Feb 15 2017 (AJC)

2/14/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection
Date: 2-14-17
Task No.:

Work Performed

Well Installation: ASW
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 0620 @ LC39B Pad B office. Geosyntec personnel (Jake Gum and Dave Sizemore) and GPI drillers begin arriving
- 0700 - inside Pad, prepping for drilling on ASW158
- 0835 - Set up on ASW151, drillers finished & grouted ASW158
- 0940 - Set up on ASW152 after completing ASW151
- 1055 - Adjusted screen interval of ASW152 to 56.5-58.5' BLS due to concern about thickness and cohesiveness of the Sandy CLAY layer @ 58-59' BLS.
- 1130 - Set up on ASW159, drillers finished & grouted ASW152
- 1230 - developing ASW159, Break for lunch
- 1300 - Resume ASW159 - drillers grouting
- 1325 - ~~Set~~ Finished ASW159, set up on ASW171
- ~~1450~~ 1450 - Set up on ASW164, finished w/ ASW171 & grouting
- 1620 - Finished & grouted ASW164, drillers set up on ASW172
- 1655 - Finished for the day. Will resume ASW172 tomorrow. Offsite

Plans/Future Activities

2-14-17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/15/17
Task No.:

Work Performed

Well Installation: ASW install
Soil Borings: Bottom 10 ft collected
DPT:
Well Inventory:
Other: Jake Crum (AJC)

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0630 - AJC arrive @ LC39B check in, meet with Ben Coppenger & Dave Sizemore (BC, DS, Geosyntec). All badges are retrieved as necessary

0645 - Conduct H&S tailgate meeting w/ ~~Gr~~ DS, BC, & GPI Crews (Thomas, Dave, Gramma & Billy, Ben)

0700 - All personnel inside Pad B area, GPI crew (Thomas Dave, Gamma) set up on ASW-210 and begin drilling after setting up exclusion zone. AJC completes the securing of previously installed wells with stakes & caution tape

0800 - GPI crew reaches target depth @ ASW-210, bottom 10' of borehole is observed & logged, no notable clay layer noted. Screen set as planned @ 50'-52' BLS, well is sealed w/ bentonite seal & hydrates for ≈20 min, well is developed @ ≈ 1.0gpm for 10-20 minutes. Notes same procedure is to be followed for all installed wells

0830 - set up on & begin drilling @ ASW209

0935 - Set well screen of ASW-209 @ ≈ 50'-52' BLS, develop well, hydrate seal (≈20min)

1010 - Set up on & begin drilling @ ASW-208

Plans/Future Activities

AJC 2/15/17

2/15/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/15/17
Task No.: —

Work Performed

Well Installation: ASW install
Soil Borings: Bottom 10 ft collected
DPT: —
Well Inventory: —
Other: Jake Crum (AJC)

Sampling Soil: —
Sampling SW/Sediment: —
Sampling Monitor Wells: —
Sampling Hazardous Waste: —
Sampling Drums: —

Observations/Issues of Concern

0630 - AJC arrive @ LC39B check in, meet with Ben Coppenger & Dave Sizemore (BC, DS, Geosyntec). All badges are retrieved as necessary

0645 - Conduct H&S tailgate meeting w/ ~~GT~~ DS, BC, & GPI Crews (Thomas, Dave, Gramma & Billy, Ben)

0700 - All personnel inside Pad B area, GPI crew (Thomas Dave, Gramma) set up on ASW-210 and begin drilling after setting up exclusion zone. AJC completes the securing of previously installed wells with stakes & caution tape

0800 - GPI crew reaches target depth @ ASW-210, bottom 10' of borehole is observed & logged, no notable clay layer noted. Screen set as planned @ 50'-52' BLS, well is sealed w/ bentonite seal & hydrates for ≈20 min, well is developed @ ≈ 1.0 gpm for 10-20 minutes. Notes same procedure is to be followed for all installed wells

0830 - set up on & begin drilling @ ASW209

0935 - Set well screen of ASW-209 @ ≈ 50'-52' BLS, develop well, hydrate seal (≈20min)

1010 - Set up on & begin drilling @ ASW-208

Plans/Future Activities

AJC 2/15/17

2/15/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 2 of 8

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/15/17
Task No.: —

Work Performed

Well Installation: ASW Install
Soil Borings: Bottom 10 ft of soil in borehole collected
DPT: —
Well Inventory: —
Other: —

Sampling Soil: —
Sampling SW/Sediment: —
Sampling Monitor Wells: —
Sampling Hazardous Waste: —
Sampling Drums: —

Jake Crum (AJC)

Observations/Issues of Concern

1100 - Screen @ ASW 208 set to ≈50'-52' BLS, well developed, seal hydrated (AJC) (20 min)
1145 - GPI Crew set up on & begin @ ASW-215
1255 - Screen @ ~~ASW-221~~ ASW-215 (AJC) set to ≈50'-52' BLS, well developed, seal hydrate (≈ 20 min)
1315 - GPI Crew set up on and begin @ ASW-221
1425 - Screen @ ASW-221 set to ≈ 50'-52' BLS, well developed, seal hydrate (≈20 min)
1500 - GPI Crew set up on and begin drilling @ ASW-216
BC advises a weather warning for high sustained winds may be applied @ 1600 hours but will not cause a stop-work provided the warning is not changed (AJC)
1610 - GPI crew reaches target depth @ ASW-216, well is developed and seal is hydrated for 20 minutes
1645 - AJC, BC & GPI crews Check out of Pad B Area

AJC 2/15/17

Plans/Future Activities

6 wells completed
Continue installing air sparge wells on 2/16/17

Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2-15-17
Task No.:

Work Performed

Well Installation: ASW
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 0620 - arrive @ LC39B - Sign in @ Pad Leader office. Tailgate meeting w/ Drillers (Cpl), Dave Sizemore, Jake Crum (Geosyntec)
- -Discuss coning off exclusion work zones.
- 0700 - Resume ASW172, see Well Installation + Soil Boring Logs
- 0830 - Finished + grouted ASW172, set up on ASW173
- 0955 - Finished + grouted ASW173, set up on ASW174
- 1120 - Finished + grouted ASW174, set up on ASW166
- 1205 - installed well in ASW166, begin well development and break for lunch.
- 1235 - Resume ASW166, drillers grout hole/annulus space of well
- 1315 - Finished grouting ASW166 and set up on ASW168
- 1445 - Finished grouting ASW168, set up on ASW167.
- 1450 - Received NWS weather alert that damaging wind warning initiated @ 1600 today → notified Dave Sizemore and Jake Crum (Geosyntec) to let their respective crew's know and be prepared for possible cease work if winds become too dangerous before typical stop-work around 1645 today. Crews encouraged to secure any debris or materials necessary
- 1555 - Finished + grouted ASW167, set up on ASW190 (adjusted ~22' N due to multiple utilities between the 2 white block small Bldgs on location, location also on grass now, whereas original location was in asphalt)
- 1645 - Drillers Finished for the day, will resume ASW190 soil lithology logging tomorrow. Off site.

Plans/Future Activities

2-15-17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/16/17
Task No.:

Work Performed

Well Installation: ASW Install
Soil Borings: Bottom 10 ft of borehole collected
DPT:
Well Inventory:
Other:
Jake Crum (AJC)

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0630 - AJC meet w/ Ben Coppenger, Dave Sizemore (BC, ~~BS~~ AJC DS, Geosyntec) & GPI crews (Billy/Ben and Thomas/Dave/Gamaa)
0645 - Discuss H&S/scope of work, H&S topic of Slips/trips/falls
0650 - AJC, BC, DS, GPI crews enter Pad B Area following check in
0710 - GPI ~~set~~ WE Crew (Dave/Thomas/Gamaa) set up on & begin drilling @ ASW-227
0755 - GPI crew reaches target depth of ASW-227 (53 ft BLS). Bottom 10 ft of soil is collected, observed & logged. No notable clay layer is observed, GPI crew sets ASW-227 screen to 50'-53' BLS as called out in scope of work. Well is set and bentonite seal is poured in and hydrates for ≈ 30 minutes, well is developed for ≈ 10 minutes
Note: Similar procedure will be followed for ~~remaining~~ AJC remaining ASW locations. AJC collects total well depths & DTW measurements from 2/15/17 wells
0845 - GPI crew set up on and begin drilling @ ASW 165
0955 - ASW-165 well screen placed @ 57'-59' BLS, well developed, seal is hydrated
1035 - GPI crew set up on & begin drilling @ ASW-154
1140 - ASW-154 well screen set @ 56'-58' BLS due to observed clay ≈ 53 ft BLS, well developed, bentonite hydrates
1230 - GPI crew set up on & begin drilling @ ASW-153

Plans/Future Activities

AJC 2/16/17

2/16/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/16/17
Task No.: —

Work Performed

Well Installation: ASW Install
Soil Borings: Bottom 10 ft of Borehole Sampled
DPT: —
Well Inventory: —
Other: Jake Crum (AJC)

Sampling Soil: —
Sampling SW/Sediment: —
Sampling Monitor Wells: —
Sampling Hazardous Waste: —
Sampling Drums: —

Observations/Issues of Concern

1400 - ASW-153 Screen set @ 57'-59' BLS, well is developed & Bentonite hydrated
1440 - GDI crew set up on & begin drilling @ ASW-150
1550 - ASW-150 screen set @ 57'-59' BLS, well developed & bentonite is hydrated
1640 - AJC, BC, GPI crews offsite after check out of Pad B Area

AJC 2/16/17

Plans/Future Activities

5 ASWs completed
Continue w/ installation 2/17/17

2/16/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection
Date: 2-16-17
Task No.:

Work Performed

Well Installation: 4 ASW
Soil Borings:
DPT:
Well Inventory:
Other:
Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 0615- arrive @ LC39B (S.De). Sign in @ PAD Office
- 0635- Tailgate meeting w/ GPI (drillers), Jake Crum and Dave Sizemore (Geosyntec). Discuss traffic safety + traffic management while installing wells near roadway.
- 0700- Resume ASW190. See Well construction and soil boring logs for more details.
- 0750- Finished + grouted ASW190, set up on ASW192. ASW192 adjusted approx. 7' north into grass and out of the road, where the original location was marked. Targeted ASWs for installation today are along roadway going from perimeter road to the pad → as such, a temporary MOT plan was installed, blocking traffic through main roadway and diverting traffic around the work zone through adjacent parking lot to allow for traffic Pad access. Plan was discussed and approved by Pad Ops personnel.
- 0900- Finished ASW ~~190~~ 192 + grouted, set up on ASW193. ASW193 adjusted approx. 6 ft to South out of asphalt and into grass median

Plans/Future Activities

(continue on next page)

2-16-17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2-16-17
Task No.:

Work Performed

Well Installation: 4 ASW
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 1105 - Finished ASW193 + grouted, set up on ASW194. ASW194 adjusted approx. 5' south out of the roadway asphalt and into grass median.
- 1200 - 1230 lunch
- 1250 - Finished ASW194 + grouted, set up on ASW230
- 1430 - Finished + grouted ASW230, set up on ASW231
- 1540 - Finished ASW231 + grouted, set up on ASW232
- 1650 - installed well & developed well for ASW232, will resume grouting hole/well tomorrow. Offsite

Plans/Future Activities

2-16-17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2-17-17
Task No.:

Work Performed

Well Installation: ~~ASW~~
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 0620 - Arrive @ LC39B (site), sign in at Pad Leader office, go to cone off ASW233 area, as it is in parking lot in front of the PMI work trailers ⇒ Reviewed work plan in parking lot w/ PMI office manager yesterday.
- 0630 - Tailgate safety meeting w/ GPI (drillers) and Dave Szemore and Jake Crum (Geosyntec). Discuss plan for the day, complacency and focus on last day of work.
- 0700 - Drillers finish grouting ASW232
- 0740 - Set up on ASW233 ⇒ ASW233 adjusted approx. 4ft east due to original location being on top of utility/electrical line, see well construction + soil boring log for details
- 0940 - Finish ASW233 + grouted, set up on ASW224
- 1110 - Finished ASW224 + grouted, set up on ASW228. Eric Seiger (Geosyntec) stopped by to check on things, all is good.
- 1200 - Installed ASW228 + developed well ⇒ Break for lunch
- 1230 - Resume ASW228
- 1315 - Finished ASW228 + grouted, set up on ASW213.
- 1510 - Finished + grouted ASW213, drillers began cleanup + topping off w/ grout holes

Mike Deliz (CWSTA PM) stops by, all seems good

Plans/Future Activities

- 1640 - Finished well install activities ⇒ all ASWs installed successfully. All wells adequately topped off w/ grout ⇒ ASW233 in parking lot grouted to approx 36", filled in w/ 20/30 sand to surface, then thin concrete slab constructed over TOC to allow for easy access during system hookup.

Drillers loaded up, off site.

2-17-17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge Well Installation
Project No.: FR1352E Phase 08
Contractors: Groundwater Protection

Date: 2/17/17
Task No.:

Work Performed

Well Installation: ASW Install
Soil Borings: Bottom 10 ft of borehole collected
DPT:
Well Inventory: AJC
Other: Jake ~~+~~ Jake Crum (AJC)

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0615 – AJC arrive @ Check in facility for Pad B Area
0630 – Meet with Ben Coppenger & Dave Sizemore (BC, DS, Geosyntec) and discuss scope & H&S with GPI crews (Thomas/Dave and Gama/Billy/Ben), H&S topic is "Complacency"
0650 – Enter Pad B area
0715 – GPI crew (Thomas & Dave) set up on & begin @ ASW-149
0835 – Set well screen for ASW-149 @ 57'-59' BLS, develop well for ~ 10 minutes & hydrate bentonite for ~ 20 minutes
0920 – GPI crew set up on & begin @ ASW-155, AJC collect Total depth & DTW from 2/16/17 wells
1045 – ASW-155 screen set @ 57'-59' BLS, develop well & hydrate bentonite seal
1115 – GPI crew set up on & begin drilling @ ASW-180
1235 – ASW-155 well screen set @ 57'-59' BLS, well is developed & bentonite seal hydrates, AJC completes DTW & Total Depth measurements
1330 – AJC offsite, Check out with Pad B Area

AJC 2/17/17

Plans/Future Activities

AJC 2/17/17

2/17/17
Signature/Date

JANUARY THROUGH FEBRUARY 2017
BORING LOGS FOR AIR SPARGE WELLS

FIELD FORMS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 001
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/18/17
Borehole Diameter: 25.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~~~ ft BLS ~ (md) NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' post-holed 5'-55' no sample collected					Well Development: ~10 gal @ ~1 gpm. Cloudy, no OD
55									
				SAND, grey, fine, moist to wet, loose, no OD			SP		
56									
									Screened: 56 to 58 ft BLS
						100%			
57									
				SAA w/ shell frags (<50%) and CLAY nodules			SP/CH		
58				~~SAA sandy CLAY and shell frags (>75%);~~ (ND)			CL/CH		
				Shell frags (>75%) w/ trace sandy CLAY; medium plasticity, soft					
59									
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW002
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/19/17
Date Completed: 1/19/17
Borehole Diameter: ~5.9"
Borehole Depth: 60 ft BLS
Depth to Water: ~2.68 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': post-holed					Well Development: ~10 gal @ 1 gpm clear, no OD
				5'-55': no sample collected					
55				55.0' - 55.5': No Recovery					
				SAND, fine, grey, loose moist to wet, no OD			SP		
56									
57						90%			
				SAA but moist and w/ interbedded CLAY nodules and trace shell fragments			SP/CH		screened: 56.8 to 58.8 ft BLS
58									
59				shell frags (~75%) w/ fine SAND & CLAY nodules interbedded; moist, semi-cohesive			CL/SP		
60				End of boring: 60 ft BLS					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -3
Geologist/Eng.: D. Silvernore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/3/17
Date Completed: 11/3/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 4.15 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 55			~~Hand Auger~~ Port-hole 0-5' 5'-55' Drilled w/ NO Sampling					
	55 TO 60			55'-60' - Gray fine SAND (SP), Very Little Frag shell, Loose, wet, NO odor		90			Screened: 56.8 to 58.8 ft BLS
				Boring term. @ 60' well Development: Removed ~7 gallons @ ~1gpm, Slightly ~~cloudy~~ pms Cloudy, NO odor					

Reviewed by Mike Bunch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0004
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/11/2017
Date Completed: 1/11/2017
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 55	-	NA	0-55' - Hand auger and blind drilled. No lithologic description available					
	55 to 60'	-	NA	55-60' - Greenish gray f. Sand, little vf. Shell frag, loose, wet, no odor Rec: 4'		80	SP	NA	Screened: 54.08 to 59.08 ft BLS
				Total Depth: 60 ft BLS Depth to Water NR Initial Color: NR Final Color: NR Odor: None Total vol removed ~10 gals 60 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -5
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/2/17
Date Completed: 11/3/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 390 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 5			0' - 5' post-hole 5' - 55' Drilled w/ NO Sampling					
	55' to 60'			- Gray fine to medium sand, Little frag. shell, wet, no odor		85			Screened: 57.1 to 59.1 ft BLS
				Boring Term. @ 60' Well development: Removed about 10 gallons @ ~ 1gpm, clear, no odor					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASWOD6
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/19/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~26.8 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': post-holed 5'-55': no sample collected					Well Development: ~10 gal removed @ ~1 gpm; cloudy, no OD
55				55'-56' = no recovery					
56				SAND, grey, fine, loose, moist to wet, no OD		0%	SP		screened: 56.1 to 58.1 ft BLS
57				SAA but moist + with some CLAY nodules/lenses interbedded (wet area from ~57'10" to 58')			SP/CH		
58				Shell frags (~75%) w/ trace sandy CLAY; medium plasticity/semi-cohesive moist; soft; grey ~~note: plasticity decreased w/ depth and was not present by 60 ft BLS~~ (MB)			CH/CL		
59									
60				End of boring: 60 ft BLS					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW007
Geologist/Eng.: Mike Burnham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/19/17
Date Completed: 1/19/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.72 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': post-holed 5'-55': no samples collected					Well Development: ~10 gal @ ~1 gpm cloudy, no OD
55				55.0'-55.5': no recovery					
				SAND, fine, gray, moist, w/ thin (<1/8") CLAY stringers/lenses; no OD					
56				SAA but wet and no CLAY		90%			screened: 50 to 58 ft
57									
				sandy CLAY + shell frag (varying percents, greater % w/ depth); medium to high plasticity, soft, moist; grey					
58				note: plasticity decreased w/ depth & was not present by 60 ft BLS					
59									
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -8
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/13/17
Date Completed: 1/13/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 4.00 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 55	-	NA	Hand Auger (post hole) 0'-5' 5'-~~65~~ 55 ft bgs Drilled w/ NO sampling.					
	55 TO 60	-	NA	55-60' - gray fine SAND (SP), w/ little frag shell, Loose, wet, NO odor		95%			Screened: 57 to 59 ft BLS
				Boring Term. @ 60' DTW: NR Development: NR Removed ~7 gallons, slightly cloudy, no odor, ~1gpm 60 ft BLS - end of boring					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0009
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/10/2017
Date Completed: 1/11/2017
Borehole Diameter: 5.9"
Borehole Depth: 60
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 55'	-	NA	0-55' - Hand auger and blind drilled. No lithologic description available					
	55' to 60'	-	NA	55-60' - Greenish gray f. Sand, loose, few f. shell frag, wet, no odor. Rec: 4' At 57.5-57.7' - Greenish Gray Clay lense, v. soft high plasticity, no odor		80	SP	NA	Screened: 57.02 to 59.02 ft BLS
				Well Development Total Depth: NR DTW: NR Initial Color: Gray Final Color: Gray Odor: None Total vol removed ~10gals 60 Ft BLS - End of Boring					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-010
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/16/17
Date Completed: 1/16/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: ~3.25 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 55		NA	0-5' Post hole 5'-55' Drilled w/ no sampling					
55	55			Gray fine SAND; loose, moist (MB), no OD. (clay nodules noted @ ~55 ft BLS)		100	SP		Screened: 56.8 to 58.8 ft BLS
				~1" sandy CLAY seam @ 56.5 ft BLS (MB)			CL		
	to 60			Gray fine SAND; loose, moist (MB), no OD					
60				Terminated @ 60' & completed as ASW-010 Well development. Removed ~10 gallons @ ~1 gpm. Slightly cloudy, no OD (MB)					

Reviewed by: W Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 011
Geologist/Eng.: Mike Burham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/20/17
Date Completed: 1/20/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~~1.86~~ ft BLS
2.25 (mg)

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-55': no sample collected					Well Development ~10 gal removed @ ~1 gpm; cloudy, no OD
55				SAND, fine, grey, moist, loose, no OD			SP		
56				SAA but wet					
				SAA but moist w/ some CLAY nodules present w/ interbedded/laminated CLAY stringers		100	SP/CH		Screened: 56.1 to 58.1 ft BLS
57									
58									
59				Shell Frags (>75%) w/ SAND & some CLAY nodules, grey, moist, not cohesive, no OD			60/SP/CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW012
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: ~~1/19~~ (mB) 1/20/17
Date Completed: 1/20/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~1.75 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': no sample collected					Well Development: ~10 gal removed @ ~1 gpm; cloudy, no OD
50				No recovery: 50'-51'					
				SAND, fine, grey, moist to wet, loose, no OD			SP		
52				52.5': ~6" nodule of inter laminated CLAY stringers & SAND (not a layer of material, just a nodule)		90	SP/CH		
				SAND, fine, grey w/ brown, moist to wet, loose, no OD			SP		
54									
56				SAND, fine, grey w/ interbedded/interlaminated CLAY nodules/lenses. CLAY is highly plastic, no OD			SP/CH		Screened: 57 to 59 ft BLS
58				58 ft BLS (mB) Shell frags (~75%) w/ some sandy CLAY, moist, some cohesiveness, grey. no OD			GC/SP/CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Cant

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BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW013
Geologist/Eng.: M.Lee Burnham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/19/17
Date Completed: 1/19/17
Borehole Diameter: ~5.9"
Borehole Depth: 60 ft BLS
Depth to Water: ~2.14 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': post-holed 5'-55': not sampled		MB			Well Development: ~10 gal amount @ ~1 gpm; grey cloudy, no OD
55				55'-56': no recovery					
56				SAND, fine, gray, moist, loose no OD	SP				Screened: 56 to 58 ft BLS
				From 56.5' to 57.0', a large nodule of interbedded/interlaminated SAND + CLAY was present, but did not make up the entire boring. Remainder of boring was SAA	SP/CH	80%			
57				SAND, fine, gray, wet, loose, no OD	SP				
58				SAA but moist + w/ shell frags (<50%)	SP				
59				SAA but w/ interbedded/interlaminated CLAY throughout + increasing shell w/ depth	SP/CL				
59		MB		shell frags (75%) w/ trace sandy clay, moist, some cohesiveness, gray, no OD	CL				
60				End of boring = 60 ft BLS					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -14
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/12/17
Date Completed: 1/12/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 4.60 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 55			0'-5' Posthole 5'-55' Drilled w/ NO sampling.					
	55 to 60			55'-60' Gray fine SAND, Frag. Shell, Loose, wet, no odor		95	SP		Screened: 57 to 59 ft BLS
				Term @ 60' Well Development: Removed ~ 10 gallons @ ~ 1 gpm, Clear, no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW – 15
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/12/17
Date Completed: 1/12/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 5.00 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 55			0'-5' Port hole 5'-55' Drilled w/ NO sampling					
	55' TO 60'			55'-60' Brown fine SAND, NO odor, wet Term @ 60'		85	SP		Screened: 56.8 to 58.8 ft BLS
				well Development: Removed ~ 10 gallons @ ~ 1 gpm, Brown, NO solids, NO odor					

Reviewed by: Mike Burns

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 016
Geologist/Eng.: M. Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/16/17
Date Completed: 1/16/17
Borehole Diameter: 5.9'
Borehole Depth: 60'
Depth to Water: ~5.04 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
55'			NA	0-5' Post holed 5-55' Drilled w/ no sample collection		NA			Well ~~design~~ mp Development: Removed ~10 gal @ 1 gpm; clear, no OD
	55 to 56			~~SAND~~ mB SAND, fine, gray, loose, ~~wet~~ moist (mB) no OD			SP		
				CLAY nodules @ ~55.5 ft BLS			CH		
				SAA			SP		
				CLAY nodules @ ~56.5 ft BLS			CH		Screened: 56 to 58 ft BLS
			NA	SAA		100	NR		
	58 to 60			~1" thick CLAY seam @ 58 ft BLS			SP		
				SAA			CH		
							SP		
60'				Terminated @ 60 ft BLS					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW017
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/16/17
Date Completed: 1/16/17
Borehole Diameter: 5.9"
Borehole Depth: ~55 ft BGS
Depth to Water: ~2.50 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' post holed 5'-50' no sample collected					
50				No Recovery (50'-51')					Well Development Removed ~10 gal @ ~1 gpm. cloudy, no OD
51				SAND, grey, fine, loose, wet, no OD (51'-52')		80%	SP		
52				SAA, but moist					Screened: 51.9 to 53.9 ft BLS
53				SAA w/ CLAY nodules (53'-53.5') SAA but w/ shell frags (<50%) (53.5'-54.5')			SP/CH SP		
54									
				SAA, no shell			SP		
55									

Reviewed by: M Conti

55 ft BLS - End of Boring

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW018
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/20/17
Date Completed: 1/20/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: ~~~2.58 ft BLS~~ 3.10 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-55': no samples collected					Well Development: ~10 gal removed @ ~1 gpm; clear, no OD
55				55.0'-55.5': No Recovery					
				SAND, fine, grey, moist, loose, no OD			SP		
56				SAA but wet			SP		
						SM/60			
57									
				SAND, fine, grey w/ interbedded/interlaminated CLAY stringers, moist; semi-cohesive -> decreasing CLAY w/ depth			SP/CH		Screened: 56.9 to 58.9 ft BLS
58				SAND, fine, grey, wet, loose			SP		
59				SAND, fine, grey w/ interbedded/interlaminated CLAY stringers, moist; semi-cohesive SAND, fine, grey w/ trace shell, moist, loose			SP/CH		
60				End of boring - 60 ft BLS					

Reviewed by: M Conti

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW019
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/20/17
Date Completed: 1/20/17
Borehole Diameter: ~5.9"
Borehole Depth: 260 ft BLS
Depth to Water: ~2.58 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5': Post-holed 5'-55': no samples collected					Well Development: ~10 gal @ ~1 gpm; clear; no OD
55				SAND, fine, grey, loose, moist, no OD			SP		
56									
57						100			
				SAA but wet			SP		
				CLAY/~~SAB~~ SAND "nodule" present in portion of boring - not entire diameter			SP/CH		Screened: 56.9 to 58.9 ft BLS
58									
59				SAA but moist & with some CLAY stringers/lamination present			SP/CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW020
Geologist/Eng.: Mike Burchim
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/20/17
Date Completed: 1/20/17
Borehole Diameter: ~5.9"
Borehole Depth: 60 ft BLS
Depth to Water: ~28' ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Potholed 5'-55': no sample collected					Well Development: ~10 gal @ 1 gpm; cloudy, no OD
55				SAND, grey, fine, moist, loose, no OD			SP		
				SAA but with thin stringers/lamination of CLAY			SP/CH		
56									56'
				SAA but w/ larger CLAY nodule, close to a seam/layer of CLAY, but it isn't a contiguous, sand + clay interming le Same as 56.5' to 56.5'			SP/CH		SCREENED
57						100%	SP/CH		
58				Same as 56.5'-57.0' but w/ shell frags starting @ 58.5'			SP/CH/GC		58'
59				Shell frags (>75%) w/ SAND + some CLAY nodules, grey, moist, semi-cohesive, no OD			GC/SP/CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Conti

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW021
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/23/17
Date Completed: 1/23/17
Borehole Diameter: 5.4"
Borehole Depth: ~60 ft BLS
Depth to Water: ~1.75 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-55': No sample collected					Well Development: ~10 gal @ 1 gpm. grey to cloudy, no OD
55				shell frags (>75%) w/ CLAY, medium plasticity, moist, no OD, grey			SP (no)		SAND observed in cuttings left in core barrel
56									
57				CLAY, grey, highly plastic, medium firmness, some shell frags (<10%)		100%	CH		Screened 52.3'-54.3
58									
59									
60				End of boring: 60 ft BLS					

Reviewed by: W Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 022
Geologist/Eng.: M. Lee Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/19/17
Date Completed: 1/19/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~1.98 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': post-holed					Well Development: ~10 gal @ ~1 gpm, cloudy, no OD
				5'-55': no sample collected					
55				SAND, fine, grey, moist, interbedded/interlaminated clay stringers throughout, no OD			SP/CH		Screened: 54.5 to 56.5 ft BLS
56				SAA but no CLAY, wet.			SP		
57				sandy CLAY, grey, highly plastic, moist, soft, w/ some shell fragments		100%	SP/CH		
58				shell frags (75%) w/ some sandy clay; moist, some cohesiveness, gray, no OD			SP/CH		
59				fat CLAY, gray, highly plastic, moist, medium stiffness			CH		
60				60 ft BLS - End of Boring					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 023
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/24/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60' BLS
Depth to Water: ~3.71 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': post-holed 5'-50': no sample collected					Well development: 10 gal at ~1 gpm
50				50-51': No recovery.					
				51': SAND, fine, gray, wet, loose, no OD			SP		
52									
54						10% / 120			
56									56'
				56.6': SAA but w/ thin (¼") CLAY stringers			SP/CH		SCREENED
							SP		
58				2" interbedded/interlaminate CLAY nodule present @ 58 ft BLS			SP/CH		58'
				58.2': SAA, no CLAY, moist			SP		
				58.5': SAA, moist, CLAY seams of varying sizes (1/16"-¼") present			SP/CH		
				59.25': shell frags (>75%), ~~SAA~~ → SAND, moist			SC/SP		
60				59.75': CLAY, fat, moist, grey, soft, highly plastic			CH		60 ft BLS = end of boring

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW024
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/24/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.94

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed					Development: ~10 gal @ ~1 gpm cloudy; no OD
				5'-50': No sample collected					
50				50.0'-50.5': No recovery					
				SAND, grey, fine, moist to wet, loose, no OD			SP		
52				CLAY nodule present @ ~52'			SP/CH		
				~~CLAY nodule @~~ CLAY nodule present @ ~53'2"		114	SP/CH		
54				54.5': SAA but w/ interbedded/interlaminated CLAY		120	SP/CH		
				SAA but no to trace CLAY			SP		
56									
				SAA but w/ interbedded/interlaminated CLAY nodules/lenses for 3", then SAND			SP/CH SP		57' SCREENED
58				3" interbedded/interlaminated CLAY nodule/lenses layer (more CLAY than layer above)			SP/CH		
				58'3": SAND, grey, moist to wet, w/ CLAY interbedded/laminated throughout increasing % w/ depth					59'
60				Depth of Boring: 60 ft BLS					

Reviewed by: M Conti

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW025
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/24/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 Ft BLS
Depth to Water: ~34'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': ~~No~~ Post-holed					Well Development
				5'-50': No sample					~10 gal @ 1gpm;
50									Cloudy, no OD
				50.0'-51.5': No recovery					
				51.5': SAND, grey, moist to wet, loose, no OD.			SP		
52									
				53.0': ~4" sandy CLAY nodule present in SAA			SP/CH		
						10%			
54						RO			
				SAA but moist					
				55.75': SAA but w/ interbedded/interlaminated CLAY nodules			SP/CA		
56				56': SAA but no to trace CLAY, wet			SP		
									57' SCREENED
				~2" CLAY nodule/interlaminated "layer" @ 58' (appears discontinuous)			SP/CH		
58				58.7': Interlaminated CLAY seam w/ SAND (~1")					59' (Approximately)
				SAND, grey, moist w/ CLAY laminations through out			SP/CH		
60									
				End of boring: 60' BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 626
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/23/17
Date Completed: 1/23/17
Borehole Diameter: ~5.9"
Borehole Depth: 60 ft BLS
Depth to Water: ~3.31 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-~~bubble~~ holed 5'-50' = no sample collected					Well Development: ~10 gal @ ~1 gpm; cloudy, no OD
50				SAND, fine, grey (some brown "mottly") w/ trace shell; moist to wet, loose			SP		
52									
54						100%			
56				SAA but moist w/ CLAY nodules that are interbedded + interlaminated CLAY, CLAY is highly plastic, grey, moist			SP/CH		56' SCREENED
58				SAA, trace CLAY, wet (~~57.0~~ 56.5-57.0) SA 56.0'-56.5' w/ varying amounts and sizes of CLAY nodules			SP/CH SP/CH		58'
60				shell frags (~75%) w sandy CLAY, semi-cohesive, moist, grey End of boring: 60 ft					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW027
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/23/17
Date Completed: 1/23/17
Borehole Diameter: 5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.87 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-hole					Well Development: ~10 gal @ ~1gpm cloudy; no OD
				5'-50': No sample collected					
50				SAND, fine, grey w/ nodules of semi-dry sandy CLAY interbedded, wet, no OD			SP/CH		
52				SAA (w/ a layer of wet sandy CLAY [2"] @ 52 ft BLS) but moist, not dry			SP/CH		← CLAY layer is very soft once touched
				SAA but w/ trace CLAY nodules			SP/CH		
54									
				thin CLAY lense/lamination observed @ 55' ft BLS			CH		
56						100%			56'
				SAA, no CLAY, wet			SP		SCREENED
58				SAA, moist, CLAY interbedded/interlaminated nodules throughout			SP/CH		58'
				shell frags (>75%) w/ CLAY/SAND, semi-cohesive, moist, grey, no OD			GC/SP/CH		
60				60 ft BLS - End of Boring					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW028
Geologist/Eng.: M. Ike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of
Date Started: 1/23/17
Date Completed: 1/24/17
Borehole Diameter: ~5.4"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.32 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post holed. 5'-50': No samples collected } 1/23/17 50'-60' collected on 1/24/17					Well Development: ~10 gal @ 1gpm; cloudy, no OD
50				50.0'-51.5': No recovery					
52				SAND, fine, wet, loose, grey, w/ some interbedded nodules of interlaminated sandy CLAY; no OD			SP/CH		
54				SAA but w/ no nodules of CLAY; just trace CLAY	102/120		SP		
56				SAND, fine, moist, grey w/ CLAY lamination + thin stringers present, no OD SAA, no CLAY, wet, loose			SP/CH SP		55' SCREENED
58				57'3": SAND, fine, grey w/ interbedded CLAY nodules & laminated CLAY, moist (more than 51.5'-53.5') SAND, fine, wet, grey, loose, no OD			SP/CH SP		57' (Approximately)
60				SAND/CLAY "plugs" w/ shell frags (coil) grey, moist, soft End of boring: 60 ft BLS			SP/CH		

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 029
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/30/17
Date Completed: 1/30/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.48 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No samples collected					Well development ~10 gal @ ~1 gpm; cloudy to clear
50'				50'-60': SAND, grey, very fine, wet, loose	SP (MW)	120/170	SP		
52'									
54'									
56'									
57'									SCREENED (Approximately)
58'									
59'									
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW030
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/24/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.61

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
50				(MB) 0'-~~50~~ 5': Post-holed 5'-50': No sample collected					Well Development: ~10 gal @ ~1 gpm; cloudy, no OD
				50'-51.5': No recovery					
52				51.5': SAND, grey, wet, loose, fine, no OD			SP		
54						(MB) 104 102/120			
56									
58				57.75': SAA but w/ some CLAY nodules interbedded/interlaminated (2" nodule @ ~~58~~ 2"), moist			SP/CL		57' Screened
				58.5': SAA but no CLAY, moist			SP		59' (Approximately)
60				59.5': Some CLAY lamination present			SP/CL		

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 031
Geologist/Eng.: Mike Burton
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/24/17
Borehole Diameter: 5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.94'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': ~~ADB~~ Post-holed (mb)					well development: 10 gal at ~1 gpm
				5'-50': No sample					
50				50.0'-51.5': No recovery					
				51.5': SAND, grey, wet, fine, loose, no OD		10% / 120	SP		
52									
54				54.0': SAA but w/ laminations/lenses of CLAY, moist			SP/CH		
				54.75': 2" seam/layer/lamination of CLAY, interbedded in SAND					
				55.0': SAND, grey, wet, fine, loose, no OD			SP		
56				56.0': SAA, but moist to wet (drier)			SP		56' SCREENED
				57.0': SAA but sandy CLAY is present, ~~mb~~ interbedded in SAND			SP/CH		
58				58.0': SAND, grey, moist fine, w/ interbedded CLAY nodules (mb) & laminations (some 3")			SP/CH		58'
				58.5': SAA, no CLAY, wet			SP		
				59.5' SA 58.0'-58.5'			SP/CH		
60									

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 032
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/25/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.50'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No sample collected					0'-50' drilled on 1/24/17 Well Development: ~10 gal @ ~1 gpm cloudy; no OD
50				SAND, grey, fine, moist, loose, no OD			SP		
				50.5': SAA, wet, trace, small CLAY nodules interbedded			SP/CH		
52									
						100%			
54									
				MB					
				~~55.0'~~					
				55.5': SAND, fine, grey, moist w/ CLAY interbedded/interlaminated			SP/CH		55.5'
56				56 ~~60.0'~~: SAA, but no CLAY			SP		SCREENED
				MB					
				57.5': SAA, but wet					57.5'
58									
				59.5': SA 55.5'-56.0' but w/ more CLAY			SP/CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 033
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/25/17
Date Completed: 1/25/17
Borehole Diameter: 5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.20 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-hold					Well Development: ~10 gal @ ~1 gpm cloudy, no OD
				5'-50': No sample collected					
50				50.0'-51.5': No recovery					
52				51.5': SAND, grey, fine, loose, wet no OD. Few small CLAY nodules/lenses present intermittently		SP			
54					10% / 12%				
56				56.5': SAND, grey, fine, moist w/ some CLAY laminations interbedded (2"), SAND, no CLAY below for 4"		SP/CH			56' SCREENED
58				57.5': SAND, grey, fine, moist to wet, loose. SAND w/ CLAY laminations below for 4"		SP			58'
				58.75': SA @ 56.5' but more CLAY + some shell frags (< 30%)		SP/CH			
60				End of boring: 60 ft BLS		SP/CH GC			

Reviewed by: M Cant

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BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 034
Geologist/Eng.: Mike Barcheck
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/25/17
Date Completed: 1/25/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.38 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed					Well development: 10 gal at ~1 gpm
				5'-50': No sample					
50				50'-51': No recovery					
				51': 3" CLAY/SAND nodule/layer			SP/CH		
				51.25": SAND, fine, grey, moist, no OD			SP		
52									
				53.75": 3" CLAY/SAND nodule/layer			108/120	SP/CH	
				54.0": SAND, fine, grey, moist, no OD			SP		
54									
									56' SCREENED
56									
				57.75": SAA but w/ CLAY laminated/interbedded throughout				SP/CH	
				58.3": SAND, grey, fine, wet, loose				SP	58'
58									
				59.5": SA 57.75'-58.3' but more CLAY				SP/CH	
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 035
Geologist/Eng.: Mike Burnham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/25/17
Date Completed: 1/25/17
Borehole Diameter: 5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.49 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-hole 5'-50': No sample collected					Well Development ~10 gal @ ~1 gpm
50				50'-52': No recovery					cloudy; no OD to clear
52				SAND, fine, grey, wet, loose, no OD		9% / 120	SP		
				52.5': SAA but w/ CLAY (wet) lenses/laminations			SP/CH		
				53.0': SAA but moist; & CLAY is thicker but still laminated					
				53.25' SAND, fine, grey, moist, loose			SP		
54				54.5': SAND, fine, grey, w/ CLAY interbeds/					
				55.0' interlaminated; moist, cohesive			SP/CH		
				SAND, fine, grey, moist, loose			SP		
56				(mp) SAND					56' SCREENED
				SA 52.5'-53.0' but moist (CLAY present)			SP/CH		
				57.25' (me)					
58				57.75': SAND, fine, grey, moist, w/ trace CLAY & shell frags			SP		58'
				59.0' SAA but w/ some CLAY laminations,			SP/CH		
				59.5': shell frags (75%) w/ CLAY, moist, grey, highly plastic			CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 036
Geologist/Eng.: Mike Burchan
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/25/17
Date Completed: 1/25/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.84 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-hold					Well Development: ~10 gal @ 1 gpm; cloudy to clear, no OD
				5'-50': No sample collected					
50				50.0'-50.5': No recovery (MB to wet)					
				50.5': SAND, fine, grey, moist, loose, no OD w/ CLAY lenses (small) (<10%) throughout			SP/CH		
52									
				53.5': SAA but w/ CLAY interbedded/ interlaminated & moist		114/120	SP/CH		
54				54.5': SAND, fine, gray, moist, loose			SP		
				55.75': SA 53.5'-54.5', but wetter (CLAY & SAND)			SP/CH		55' SCREENED
56				56.25': SAND, fine, gray, wet, loose			SP		
				57.5': CLAY w/ sm shells/SAND interlaminated & interbedded, highly plastic, grey, moist			CH		57'
58				58.0': shell frags (~75%) w/ some CLAY, moist					
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 037
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.30 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed					Well development: ~10 gal @ ~1 gpm; cloudy to clear
				5'-50': No samples collected					
50'				50'-54.5': SAND, grey, very fine, wet, loose		120/120	SP		
52'									
54'				54.5'-57.5': SAA, trace clay					
56'									
57'									SCREENED
58'				57.5'-58': SAND with clay interbedded/interlaminated, grey, very fine, wet, loose					
				58'-60': SAND, grey, very fine, wet, loose, trace clay					
59'									
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burke

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BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 038
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/30/17
Date Completed: 1/30/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.50 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' Post-holed 5'-50' No samples collected.					Well development: ~10 gal @ ~1 GPM; cloudy to clear
50'				50'-58.75': SAND, grey, very fine, wet, loose		12"/12"	SP		
52'									
54'									
56'									
57'									SCREENED (Approximately)
58'				58.75'-59': Clayey SAND, grey, very fine, wet			SC		
59'				59'-60': SAND, grey, very fine, wet, loose			SP		
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 039
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/30/17
Date Completed: 1/30/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.48 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No samples collected.					Well development ~12 gal @ ~1 gpm, cloudy to clear
50'				50'-54': SAND, grey, very fine (vf), wet, loose					
52'									
							120/120	SP	
54'				54': SAA with trace ~~interbedded~~ CLAY (~2") (mc) 54.2': ~~intermittent~~ SAND, grey, very fine, wet, loose					
56'				56': SAA with trace CLAY (~2") 56.2': SAND, grey, very fine, wet, loose					57'
58'									SCREENED (Approximately)
									59'
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 040
Geologist/Eng.: Mike Burton
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/27/17
Date Completed: 1/27/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.55 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed.					Well Development. ~10 gal @ ~1 gpm. cloudy, no OD
				5'-50': No sample collected					
50				50'-52'; no recovery					
52				52.0': SAND, fine, grey, wet, loose, no OD; some CLAY lenses interspersed			SP/CH		
54						46/120			
56									56' SCREENED
				56.5': SAA but w/ CLAY interbedded/interlaminated			SP/CH		
				57.5': SAA but no CLAY			SP		
58				58.0': SA 56.5'-57.5' (CLAY present)			SP/CH		58' (Approximately)
				58.5': SAND, grey, fine, moist, loose			SP		
				59.5': SAND, grey, fine, moist w/ CLAY interbedded/interlaminated (more than shallower)			SP/CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -41
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/2/17
Date Completed: 11/2/17
Borehole Diameter: 5.9'
Borehole Depth: 55'
Depth to Water: 4.05 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 50			0'-5' Post hole 5'-50' Drilled w/ NO sampling					
	50 TO 55'			50'-55' Brown fine to med. SAND, wet, NO odor		NR			Screened: 51.9 to 53.9 ft BLS
				well Development: Removed ~ 10 gallon @ approx ~ 1.0 gpm, slightly cloudy, NO odor 55 ft BLS - End of Boring			S		

Reviewed by: Mike Burt

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -42
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/12/17
Date Completed: 1/12/17
Borehole Diameter: 5.9"
Borehole Depth: 55'
Depth to Water: 4.50 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 50			0'-5' Post hole 5'-50' Drilled w/ NO Sampling					
	50 TO 55			50'-55' Gray fine SAND, Frag. shell, Loose, wet, NO odor		90	SP		Screened: 52.2 to 54.2 ft BLS
				Term. @ 55' well Development: Removed ~ 10 gallons @ ~ 1.0 gpm, clear, NO Odor					

Reviewed by: Mike Burt

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BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -43
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/12/17
Date Completed: 1/12/17
Borehole Diameter: 5.9"
Borehole Depth: 55'
Depth to Water: 3.15 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
Dry to 50	0 to 50			0'-5' POST hole 5'-50' Drilled w/ NO Sampling					
	50 to 55			50'-54.7' Gray med SAND, Frag. Shell, loose, wet, NO odor 54.7'-55' Gray CLAY			SP CH	85	Screened: 52 to 54 ft BLS
				Well Development: Removed ~ 10 gallons @ ~ 10 gpm, slightly cloudy, no odor 55 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 044
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/16/17
Date Completed: 1/16/17
Borehole Diameter: 5.9"
Borehole Depth: 55 ft BLS
Depth to Water: ~4.47 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' Post-holed 5-50' Drilled w/ no sampling					Well Development. Removed ~10 gal @ ~1 gpm. Cloudy, no OD
50				SAND, gray, fine, loose, moist (~50.0'-51.5') & wet (51.5'-53.5'), no OD	SP				
51				No recovery 50'-51'					
						~20%			
52									Screened 53.2 to 55.5 ft BLS
53				53.5' SAA (moist) but w/ shell frags (<50%)			NR		
54				54.0' SAA, no shell frags but with some CLAY nodules interbedded	SP/CH				
55				End boring @ 55 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 045
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: ~5.9"
Borehole Depth: 55'
Depth to Water: ~2.25 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' post-holed 5'-50' no sample collected					Well Development: ~10 gal removed @ 1 gpm; cloudy, no OD
50				50'-51' - no recovery					
51				SAND, grey, fine, loose, moist no OD			SP		
52				6" wet from ~ 52'-52.5'		80%			Screened: 52 to 54 ft BLS ↓
53				CLAY w/ sand + shell frags, highly plastic, moist, grey (53'-53.25')			CH/SP		
				SAND, grey, fine, loose, moist w/ shell frags (~50%) + interbedded			SP/CH		
54				CLAY nodules					
				SAA w/ no shell frags			SP/CH		
55				End of boring @ 55 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW046
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/18/17
Borehole Diameter: ~5.9"
Borehole Depth: ~55 ft BLS
Depth to Water: 5.22 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
50				0'-5' Post-holed 5'-50' No Sample Collected 50'-50.5' - No Recovery SAND, fine, gray, moist, loose, no OD.					Well development: ~10 gal removed @ ~1 gpm; cloudy, no OD No Recovery 50.0'-50.5'
51									
52				SAA but wet		54/60			Screened: 52.1 to 54.1 ft BLS
53				SAA but moist and with few CLAY nodules interbedded					
54									
55				Boring terminated: 55 ft BLS					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW047
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/19/17
Date Completed: ~~1/19/17~~ 1/19/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed					Well Development: ~10 gal @ ~1 gpm; cloudy, no OD
				5'-55': no sample collected					
55									
				~~SAND~~ MD SAND, fine gray, moist w/ interbedded clay nodules (~1", ~~wet~~ max size) and some thin interlaminated layers; no OD. CLAY is highly plastic.					Screened: 53.5 - 55.5 ft BLS
56									
				shell frags (~75%) w/ some sandy CLAY, moist, some cohesiveness, gray, no OD		100			
57									
58									
				fat CLAY, gray, highly plastic, moist, medium stiffness					
59									
60				end of boring: 60 ft BLS					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -48
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/11/17
Date Completed: 1/11/17
Borehole Diameter: 5.9"
Borehole Depth: 55'
Depth to Water: ~~4~~ ~~ems~~. 4.25 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 50			0'-5' Post hole 5'-55' Drilled w/ NO sampling					
	50 TO 55			50'-55' Brown fine SAND, Frag. Shell, loose wet, NO odor		T5	SP		Screened: 51.8 to 53.8 ft BLS
				Term @ 55' Well Development. Removed ~10 gallons @ ~1.0 gpm, Clear, No odor					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -49
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/11/17
Date Completed: 1/11/17
Borehole Diameter: 5A'
Borehole Depth: 55'
Depth to Water: 4.30 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 50			0'-5' Post hole 5'-50' Drilled w/ NO Sampling					
	50 TO 55			50'-55' Brown fine SAND, wet, no odor Boring terminated @ 55'		NR			Screened: 52 to 54 ft BLS
				Well Development: Removed ~ 10 gallons @ ~ 1gpm, Slightly Cloudy, no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW ~~-48~~ (50)
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/11/17
Date Completed: 1/11/17
Borehole Diameter: 5.9"
Borehole Depth: 55'
Depth to Water: 4.50 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 51			50-56.25' ~~Brown~~ Gray fine sand w/ frag. shell, loose, wet, no odor		75	SP		Screened: 51.9 to 53.9 ft BLS
				Term @ 55' Well Development: Removed @ 10 gallons @ ~1gpm, slightly cloudy, no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW051
Geologist/Eng.: Mike Burnham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: ~5.9"
Borehole Depth: ~55 ft BLS
Depth to Water: ~29' ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' post-holed 5'-50' no sample collected					Well development: 10 gal at ~1 gpm
50				No recovery 50-51 ft BLS					
51				SAND, fine, gray, moist, loose no OD					Screened: 51.9 to 53.9 ft BLS ↓
52				SAA but wet		80%			
53				SAA but moist + with some CLAY nodules interbedded (infrequent)					
54				SAA but no CLAY and with shell fragments (<10%)					
55				End of boring 55 ft BLS					

Reviewed by: M Conti

Geosyntec consultants

BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 052
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: 5.9"
Borehole Depth: ~55 ft BLS
Depth to Water: ~~ft~~ ~3.1 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' Post-holed 5'-50' No sample Collected					Well Development: ~10 gals removed @ ~1 gpm
50				50'-50.5' - No Recovery					
				~~SAD~~ no SAND, fine, gray, moist loose w/ some interbedded clay nodules, no OD				SP/CH	Screened: 51.5 to 53.5 ft BLS
51									
							90%		
52									
								SP	
				SAA but wet + no CLAY					
53				SAA but moist				SP	
				Sandy CLAY, highly plastic, soft, moist (53', 10" to 54'0"), no OD				CH	
				SAND, fine, gray, moist w/ shell frags (<50%)				SP	
54									
55				Terminate boring @ 55 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 053
Geologist/Eng.: Mike Burcher
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/18/17
Borehole Diameter: 25.9"
Borehole Depth: ~55 ft BLS
Depth to Water: ~6.80 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' post-holed 5'-50' no sample collected					Well Development: ~10 gal removed @ ~1 gpm; cloudy, no OD
50				No Recovery: 50.0'-50.3' SAND, grey, fine, loose, moist no OD			SP		
51									
52				SAA but wet		56/60	SP		
53				SAA but moist + w/ a CLAY nodule identified @ 53 ft BLS			SP/CH		Screened: 52.1 to 54.1 ft BLS
54				SAA but w/ shell frags (<15%) + some small CLAY nodules			SP/CH		
55				Boring terminated: 55 ft BLS					

Reviewed by: W Cass

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 054
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/25/17
Date Completed: 1/25/17
Borehole Diameter: 5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.41 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-hold 5'-50': No sample collected					Well Development: ~10 gal @ ~1 gpm, (cloudy, no OD)
50				50-51': No Recovery					
				51': ~~ELP~~ no SAND, grey, fine, w/ interbedded/interlaminated CLAY + some/trace shell frags. Observed very moist, soft CLAY in portions as well			SP/CH		
52				53': SAND, grey, fine, loose, wet, no OD		10# / 12"	SP		
54									
				55.5': ~~SAD~~ no SAND, grey, fine, w/ interbedded/interlaminated CLAY, moist to wet (more than 51'-53')			SP/CH		55' SCREENED 57'
56									
58				59': SAA but no CLAY			SP		
				59.7': shell frags (~75%) w/ SAND + CLAY			SP/CH		
60'				End of Boring - 60 ft BLS					

Reviewed by: M Cassel

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW055
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: ~5.9"
Borehole Depth: ~55 ft BLS
Depth to Water: ~4.71 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' post-hole					Well Development: ~10 gal @ 2 gpm; cloudy + no OD
				5'-50' no sample collected					
50				50.0'-50.7': no recovery					
				SAND, grey, fine, loose, moist, no OD					
51						54/60	SP		
				SAA but wet					
52									Screened: 52 to 54 ft BLS
									↓
53									
54				SAA but moist					
55				End of boring: 55 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW056
Geologist/Eng.: Mike Burchan
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: 5.9"
Borehole Depth: ~55 ft BLS
Depth to Water: 6.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' post-holed 5'-50' no sample collected					Well Development
				50'-52' No Recovery					Removed ~10 gal @ 10 gpm
50				SAND, gray, fine, wet, loose no OD			SP		cloudy, no OD
51						60%			
									Screened: 51.8 to 53.8 ft BLS
52									
53								SP	
54				SAA but moist CLAY nodules @ 54.5'				SP/CH	
55				End Boring @ 55'					

Reviewed by: W Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -57
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/11/17
Date Completed: 1/11/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 4.15 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 To 55	-	NA	0'-5' Post hole 5'-55' Drilled w/ NO Sampling					
	55 To 60	-	NA	55' to 58' Gray fine SAND, frag shell, ~~Sand~~ Loose, wet, NO odor 58'-60' Gray CLAY, NO odor		75	SP CH		Screened: 56.3 to 58.3 ft BLS
				Term. @ 60' and Completed as ASW-57 Well Development: Removed @ 10 gallons @ ~ 1 gpm, Slightly Cloudy, NO odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW058
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.34 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed					Well Development: ~10 gal @ ~1 gpm cloudy, no OD
				5'-50': No sample collected					
50				50'-51': no recovery					
				51.0': SAND, grey, wet, fine, loose, no OD w/ some CLAY lenses & laminations intermittently			SP/CH		
52									
						108			
54						120			
									55' SCREENED
				55.5': SAND, grey, fine, moist w/ CLAY laminations/interbedded			SP/CH		
56				56.2' SAND, grey, fine, loose, moist			SP		
									57' (Approximately)
				57.75': SAA but w/ CLAY interbedded & interlaminated			SP/CH		
58									
				59.0': SAA but not no CLAY			SP		
				mix of shell frags, SAND, CLAY, moist semi-cohesive, no plasticity			SP/CH/GL		
60				End of boring: 60 ft BLS					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW059
Geologist/Eng.: Mike Bachan
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.88 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5': Post-holed 5'-50': no sample collected					Well Development: ~10 gal @ ~1 gpm cloudy; no OD
50				50'-51': No recovery					
				51': SAND, grey, fine, wet, loose, no OD			SP		
52				52': SAA but w/ CLAY interbedded/interlaminated; 4" layer of SAND @ 52'11"-53'3"; ~~6" layer~~ mb		108/120	SP/CH		
54				6" layer of SAND (54'-54.5')					
				CLAY becomes wet and very soft from 55'-55.5'					55' SCREENED
56				55.5': SAND, grey, moist to wet, loose, fine					
				56.5': SAA but w/ CLAY interbedded + interlaminated, moist (more than shallower)					
				57.5': SAA, no CLAY, wet			SP		57' (Approximately)
58				58': shell frags (~75%) w/ CLAY; semi-cohesive, some plasticity, moist			GC/CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW0060
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: 5.9"
Borehole Depth: 60 ft BLS
Depth to Water: ~2.79 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5': Post-holed					Well Development: ~10 gal @ ~1 gpm; cloudy to clear, no OD
				5-50': Not sampled					
50				50'-51': No recovery					
				51': SAND, fine, grey, moist, with interbedded + interlaminated CLAY; no OD			SP/CH		
				51.7': SAA but no CLAY, moist to wet			SP		
52				52.2': SAND, fine, grey, moist w/ interbedded + interlaminated CLAY (more SAND than CLAY); water content increasing w/ depth			SP/CH		
54									54' SCREENED
				55.25': SAA, but moist + more CLAY		108/120	SP/CH		
56									56'
				57.25': shell frags (75%) w/ CLAY, moist, grey, some plasticity, cohesive			CH/CH		
58									
				59.1': CLAY; grey, moist, medium soft, highly plastic			CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Conti

Geosyntec consultants

BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW061
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.46 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No sample collected					Well Development: ~10 gal @ ~1 gpm, cloudy grey; no OD
50				50'-51': No recovery					
				51': SAND, grey, fine, ~~not~~ wet, loose, no OD			SP		
				51.7': SAA but w/ CLAY interbedded & interlaminated			SP/CH		
52				52.25': SAND, grey, fine, wet, loose, trace CLAY (as lenses)		108/120	SP/CH		
				53.5': SAA but moist w/ CLAY interbedded & interlaminated			SP/CH		
54				54.0': SAND, grey, fine, moist, loose wetness ↑ w/ depth			SP		
				55.0' CLAY nodule (CLAY/SAND interbedded) present to 55.25'			SP/CH		
56							SP		56' SCREENED
				57.5': CLAY nodule present to 57.7'			SP/CH		
				58.0': SAND, grey, fine, moist w/ interbedded/interlaminated CLAY			SP		58'
58				59.0': shell frags, SAND, CLAY w/ increasing % shell & CLAY w/ depth, until shell frags (75%), w/ CLAY, semi-cohesive, moist, semi-plastic			SP/GC/CH		
10				End of boring @ 60 ft BLS					

Reviewed by: M Cox

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW162
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: 5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.02 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-Loled					Well Development: ~10 gal @ ~1 gpm; cloudy; no OD
50				5'-50': No sample collected					
				50'-51': No recovery					
51				51.0': SAND, fine, grey, moist to wet, loose, no OD w/ some CLAY lenses present, ~~as~~ of various sizes			SP/CH		
54				53.5': SAA but w/ CLAY interbedded/interlaminated mB	108/120		SP/CH		
				54.8': SAND, fine, grey, wet, loose			SP		55' SCREENED
56				56.0': 3" interlaminated CLAY 56.25': SAND, fine, grey, loose, moist to wet			SP/CH SP		57'
				57.75': SAA but moist + w/ CLAY interbedded/interlaminated w/ shell frags increasing w/ depth			SP/CH		
				59.0': shell frags (75%) w/ CLAY, semi-cohesive, moist, some plasticity					
60				End of boring: 60 ft BLS		64	CH		

Reviewed by: M Cash

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 063
Geologist/Eng.: Mike Burnham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.74 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': post-holed					Well Development
				5'-50': no sample collected					~10 gal @ ~1 gpm
									clear; no OD
				No recovery: 50.0'-51.5'					
52				51.5': SAND, grey, fine, moist to wet, loose w/ some CLAY lenses, no OD			SP/CH		
				53.5': SAA but w/ mB CLAY interbedded/ interlaminated		102/120	SP/CH		
54				54.2': SAND layer (4")			SP		
				~~54.25'~~ 54.5': CLAY laminations ~~(4")~~ present			SP/CH		
				55.5': SAND, fine, grey, wet, loose			SP		55'
56				56.0': SAA but wet and w/ CLAY inter-bedded/ interlaminated (more than shallower depth)			SP/CH		SCREENED
				56.3': 2" SAND layer			SP		
				57.0': SAND, grey, fine, moist, loose			SP/CH		57'
58				57.25': Shell frags (~75%) w/ CLAY; semi-cohesive, ~~soupy~~ (mB) some plasticity, moist			SP		
							GC/CH		
60				End of boring: 60 ft BLS					

Reviewed by: M Cant

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 69
Geologist/Eng.: Ron Lent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/30/17
Date Completed: 1/30/17
Borehole Diameter: 5-9"
Borehole Depth: 60'
Depth to Water: 3.2'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND, no odor		NR	SP		
	55 to 60			55'-60' Gray fine SAND w/ trace clay, no odor			SP		Screened 57'-59'
				Terminated @ 60', completed as ASW-69					
				Well Development: Removed 15 gal @ 1 gpm					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 065
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/3/17
Date Completed: 2/3/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No samples collected					well development: ~40 gal @ ~1 gpm; cloudy to clear
50'				50' - 54': SAND, grey, very fine, wet, loose		120/120	SP		
52'									
54'				54' - 59.5': SAA, trace clay					
56'									57'
58'									SCREENED
				59.5'-59.8': SAA with shell fragments					59'
				59.8'-60': Sandy CLAY, grey, very fine, high plasticity, soft			CH		
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW066
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.45 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed 5'–50': No samples collected					well development: ~12 gal @ ~1 gpm; cloudy to clear
50'				50'–54': SAND, grey, very fine, wet, loose		120/120	SP		
52'				52'–54': SAA, trace clay					
54'				54'–58': SAND, grey, ~~very~~ fine, (w) wet, loose					
56'									
									57'
58'				58'–58.5': SAA, trace clay 58.5'–~~59'~~ (w) 60': SAND with clay interbedded/interlaminated grey, very fine, wet, loose					SCREENED (Approximately) 59'
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 067
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.15 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed 5'–50': No samples collected					well development: ~12 gal @ ~1 gpm, cloudy to clear
50'				50'–51.5': SAND, grey, very fine, wet, loose		12/12	SP		
				51.5': SAA with trace CLAY (~2") 51.7'–54.25': SAND, grey, very fine, wet, loose					
52'									
54'				54.25': SAA with trace CLAY (~2") 54.5'–59.75': SAND, grey, very fine, wet, loose					
56'									
									57'
58'									SCREENED
									59'
60'				59.75'–60': Sandy CLAY, grey, very fine, high plasticity End of boring 60 ft BLS			CH		

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 068
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed 5'–50': No samples collected					Well development ~12 gal @ ~1 spm; cloudy to clear
50'				50'–59.75': SAND, grey, very fine, wet, loose		120/120	SP		
52'									
54'									
56'									
57'									SCREENED (Approximately)
58'									
59'									
				59.75'–60': ~~SAK~~ Sandy CLAY, grey, very fine, high plasticity			CH		
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burke

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 069
Geologist/Eng.: Mike Burchan
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of
Date Started: 1/27/17
Date Completed: 1/27/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.10 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No sample collected					Well development: 10 gal at ~1 gpm
50'				50'-50.5': No recovery 50.5': SAND, grey, fine, moist, w/ CLAY interlaminated/interbedded, no OD 51.0': SAND but no CLAY moist to wet					
52				52.5'		114/120			
				MB 53.5': CLAY nodule (interbedded sand + clay) present (~2") 54.2': thin layer of CLAY nodules (small) wet SAND below					
54									
56				56.5': SAND, grey, fine moist w/ CLAY interbedded/interlaminated 56.80': SAND, fine, grey, wet, loose					57' SCREENED
58				58.0': SA 56.5'-56.80' (CLAY present) 58.5': SAND, grey, fine, moist, loose 59.2': SAND, grey, fine, moist w/ CLAY interbedded/interlaminated (more than shallower layers)					59'
60				End of boring: 60 ft BLS					

Reviewed by: M Conti

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW070
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/27/17
Date Completed: 1/27/17
Borehole Diameter: 5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.39 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed					Well development: 10 gal at ~1 gpm
				5'-50': No sample collected					
50				50'-51': No recovery					
				51.0': SAND, grey, fine, moist, loose, no OD, trace CLAY lenses					
52				52.75': SAA but w/ CLAY interbedded/interlaminated					
				53.5': SAND, grey, fine, wet, loose					
54				54.5': CLAY nodule (SAND + CLAY interlaminated) present, ~4"		108/120			
56				57.0': SAA but w/ some CLAY interlaminated/interbedded					56 SCREENED
58				58.5': 3" seam of SAND, grey, fine, moist, loose					58 (Approximately)
				58.75': SAND, fine, grey, moist w/ CLAY interbedded/interlaminated (amount ↑ w/ depth					
60				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 71
Geologist/Eng.: Zackary Munyer
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/27/17
Date Completed: 1/27/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 2.8' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/no sample					
	50 to 60			50'-55' Gray fine SAND, no odor 55'-56' No recovery 56-58.5 Gray fine SAND, loose, wet 58.5'-60' Gray fine SAND, no odor		95% (50-55) 80% (55-60)	SP SP SP		Screened 57'-59' (Approximately)
				Terminated @ 60', completed as ASW-71 Well development: Removed 10 gal @ 1 gpm					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 072
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/3/17
Date Completed: 2/3/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed 5'–50': No samples collected					Well development: ~10 gal @ ~1 gpm; cloudy to clear
50'				50'–53': SAND, grey, very fine, (m) ~~wet~~ moist, loose		120/120	SP		
52'									
				53'–60': SAA, wet, trace clay					
54'									
56'									
									57'
58'									SCREENED
									59'
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 073
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: ~~2/1~~ (MW) 2/2/17
Date Completed: 2/2/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.30 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed					Well development: ~50 gal @ ~1 gpm; cloudy to clear
				5'–50': No samples collected					
50'				50'–51.5': SAND, grey, very fine, wet, loose		120/120	SP		
				51.5'–52': SAA, trace clay					
52'				52'–58.5': SAND, grey, very fine, wet, loose					
54'									
56'									
									57'
58'				58.5'–59.5': SAA with clay interbedded/interlaminated					SCREENED (Approximately)
									59'
				59.5'–60': Sandy CLAY, grey, very fine, high plasticity			CH		
60'				End of boring 60 Ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 074
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.30 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed					Well development: ~14 gal @ ~1 gpm; cloudy to clear
				5'-50': No samples collected					
50'				50' - 54' : SAND, grey, very fine, wet, loose		120/120	SP		
52'									
54'				~~55~~ 54' - 58' : SAA, trace clay					
56'									
									57'
58'				58' - 58.5': SAND with clay interbedded/interlaminated, grey, very fine, wet, loose					SCREENED (Approximately)
				58.5' - 59.5': SAND, grey, very fine, wet, loose, trace clay					59'
				59.5' - 59.75': SAA with clay interbedded/interlaminated					
				59.75' - 60': Sandy CLAY, grey, very fine, high plasticity			CH		
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 075
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.68 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed.					well development: ~12 gal @ ~1 gpm; Cloudy to clear
				5'–50': No samples collected					
50'				50'–~~55'~~ 56': SAND, grey, very fine, wet loose		120/120	SP		
52'									
54'									
				~~57'~~ ~~55'~~ ~~59.25'~~ SAA, moist (MW)					
56'				56' (MW) 57.5' ~~57'~~ –59.25' (MW): SAA, moist, trace CLAY					
				57.5'–59.25': SAND, grey, very fine, wet, loose					57'
58'									SCREENED (Approximately)
				59.25'–59.5': moist SAA with trace CLAY					59'
				59.5'–60': sandy CLAY, grey, very fine, high plasticity			CH		
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 76
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/27/17
Date Completed: 1/27/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 4.5' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/no sample					
	50 to 60			50-55 Gray fine SAND, no odor		95% (50-55)	SP		
				55'-59.5' Gray fine SAND, loose, wet, no odor			SP		Screened ~57'-59'
				59.5'-60' Gray fine SAND, w/trace fines, wet, no odor		80% (55-60)	SP		
				Terminated @ 60' bls, completed as ASW-76 Well development: Removed 10 gal @ 1 gpm, clear, no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 77
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/28/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: ~~3.7'~~ 3.1' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/no sample					
	50 to 60			50'-55' Gray fine SAND, no odor		95% (50-55)	SP		
				55'-56' No recovery					Screened ~57'-59'
				56'-60' Gray fine SAND, loose, wet, no odor		80% (55-60)	SP		
				Terminated @ 60' bls, completed as ASW-77 Well development: Removed 10 gal @ 1 gpm, clear, no odor					

Reviewed by: Mike Burns

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 78
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/27/17
Date Completed: 1/27/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 2.7' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0 to 50				0'-5' Post hole 5'-50' Drilled w/no sample					
50 to 60				50'-60' Gray fine SAND, no odor	90% (50-55) 85% (55-60)		SP		Screened 57'-59'
				terminated @ 60' bls, completed as ASW-78 Well development: Removed 10 gal @ 1 gpm, clear no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 079
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/3/17
Date Completed: 2/3/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed 5'–50': No samples collected					Well development: ~10 gal @ ~1 gpm; cloudy to clear
50'				50'–53': SAND, grey, very fine, wet, loose		120/120	SP		
52'									
				53'–54.5': SAA, trace clay (MW)					
54'				54.5'–55': SAND with clay interbedded/interlaminated, grey, very fine, wet, loose					
				55'–57.5': SAND, grey, very fine, ~~wet~~ moist (MW) loose, trace clay					
56'									
				57.5'–58.5': SAA, trace shell fragments					57'
58'				58.5'–59': SAND with clay interbedded/interlaminated, grey, very fine, wet, loose					SCREENED (Approximately)
				59'–60': SAND, grey, very fine, moist, loose, trace clay					59'
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 080
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/3/17
Date Completed: 2/3/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed 5'–50': No samples collected					well development: ~20 gal @ ~1 gpm; cloudy to clear
50'				50' – 58' : SAND, grey, very fine, wet, loose, trace clay		120 120	SP		
52'									
54'									
56'									
									57'
58'				58' – 58.2': SAND with clay interbedded/interlaminated, grey, very fine, wet, loose 58.2'–59': SAND, grey, very fine, wet, loose					SCREENED
				59'–60': Sandy CLAY, grey, very fine, high plasticity, soft			CH		59'
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 81
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.6' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/no sample					
	50 to 60			50'-55' Gray fine SAND, no odor 55'-56' No recovery 56'-60' Gray fine SAND, trace shell fragments, loose, wet, no odor		95% (50-55) 80% (55-60)	SP SP		Screened 57'-59'
				Terminated @ 60' bls, completed as ASW-81 Well development: Removed 10 gal @ 1 gpm, clear, no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 82
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.5' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0 to 50				0'-5' Post hole 5'-50' Drilled w/no sample					
50				50'-55' Gray fine SAND, no odor		95% (50-55)	SP		
to				55'-57' No recovery					Screened 57'-59' bls
				57'-59' Gray fine SAND, clay nodules, loose, wet, no odor		60% (55-60)	SP		
				59'-59.5' Gray CLAY, trace fine sand, moderate plasticity, no odor			CL		
60				59.5'-60' Gray fine SAND, trace fines, loose, wet, no odor			SP		
				Terminated @ 60' bls, completed as ASW-82 Well development: Removed 10 gal @ 1 gpm, clear, no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 083
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/3/17
Date Completed: 2/3/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed 5'–50': No samples collected					well development: ~12 gal @ ~1 gpm; cloudy to clear
50'				50'–57': SAND, grey, very fine, wet, loose, trace clay		120/120	SP		
52'									
54'									
56'									
				57'–57.5': SAND with interbedded/interlaminated clay (m), grey, very fine, wet, loose					57'
58'				57.5'–58.5': SAND, grey, very fine, moist, loose, trace clay (m) ~~(w)~~					SCREENED
				58.5'–59.75': SAA, wet					59'
				59.75'–60': SAA with shell fragments					
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 084
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed					well development: ~10gal @ ~1 gpm, cloudy to clear
				~~5'~~ (PM) 5'–50': No samples collected					
50'				50' – 52.75' SAND, grey, very fine, wet, loose, trace clay		120/120	SP		
52'				52.75'–53.3': SAA with clay interbedded/interlaminated					
				53.3'–54': SAND, grey, very fine, moist, loose					
54'				54'–58.5': SAA, trace clay, wet					
56'									
									57'
58'									SCREENED
				58.5'–59': SAND with clay interbedded/interlaminated, grey, very fine, wet, loose					59'
				59'–60': SAA with shell fragments					
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 85
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/25/17
Date Completed: 1/25/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.1' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	c			0'-5' Post hole					
	to			5'-50' Drilled w/no sampling					
	50								
	50			50'-55' Gray fine SAND, no odor	85' (50-55)		SP		
	to			55'-60' Gray fine SAND, loose, wet, no odor.	70' (55-60)		SP		Screened ~57'-59'
	60								
				Terminated @ 60' bls, completed as ASW 85					
				Well development: Removed 10 gal @ 1 gpm, clear, no odor, trace fine sand					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 86
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.7' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0' to 50'			0'-5' Post hole 5'-50' Drilled w/no sample					
	50			50'-55' Gray fine SAND, no odor		90% (50-55)	SP		
	to			55'-56.5' No recovery 56.5'-57.5' Gray fine SAND, trace shell fragments, loose, wet, no odor 57.5'-58' Gray fine SAND, clay nodules, wet, no odor 58'-60' Gray fine SAND, loose, wet, no odor		70% (55-60)	SP SP/CH SP		Screened ~57'-59'
	60			Terminated @ 60' bls, completed as ASW-86 Well development: Removed 10 gal @ 1 gpm, clear, no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 87
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/25/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: ~~3.69 bm~~ 3.2' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/no sampling					
	50 to 60			50'-55' Gray fine SAND, no odor 55'-58' Gray fine SAND, loose, wet, no odor 58'-60' Gray fine SAND, wet, no odor		80% (50-55) 80% (55-60)	SP SP SP		Screened ~57'-59'
				Terminated @ 60' bls, completed as ASW-87 Well development: Removed 10 gal @ 1gpm, clear, no odor, trace fine sand					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-88
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/25/17
Date Completed: 1/25/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 2.7' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/no sample					
	50 to 60			50'-55' Gray fine SAND, no odor		95% (50-55)	SP		
				55'-56' Gray fine SAND, loose, wet, with clay nodules, no odor			SP		Screened 57'-59'
				56-59.5 Gray fine SAND, loose, wet, no odor		80% (55-60)	SP		
				59.5'-60' Gray sandy CLAY, with fine SAND, wet, low plasticity, no odor			CL		
				Terminated @ 60' bls, completed as ASW-88 Well development: Removed 10 gal @ 1 gpm clear, no odor, trace fine sand					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 89
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/26/17
Date Completed: 1/26/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.7' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/no sample					
50	50 to 60			50'-55' Gray fine SAND, no odor		85% (50-55)	SP		Screened ~56'-58'
				55-58.5' Gray fine SAND, loose, wet, no odor		80% (55-60)	SP		
				58.5'-59' Gray sandy CLAY, w/ fine sand, moderate to low plasticity, no odor			CL		
				59'-60' Gray fine SAND, no odor			SP		
				Terminated @ 60' bls, Completed as ASW-89 Well development: Removed gal @ 1 gpm, clear, no odor					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 90
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/24/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.4' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Port hole 5'-50' Drilled w/no sampling					
50				50'-55' Gray fine SAND, no odor		60% (50-55)	SP		
				55-59.5' Gray fine SAND, loose, wet, no odor			SP		Screened ~57'-59'
60				59.5'-60' Gray fine SAND w/trace clay nodules, no odor		80% (55-60)	SP		
				Terminated @ 60' and completed with ASW-90 well development: Removed 10 gal @ 1 gpm, clear, no odor					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 91
Geologist/Eng.: Zackery Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/24/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 1.5' BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50	—	—	0'-5' Post hole 5'-50' Drilled w/no sampling	—	—		—	—
	50 to 60			50'-55' Gray fine SAND, no odor		80% (50-55)	SP		
				55'-59.5' Gray fine SAND, loose, wet, no odor		80% (55-60)	SP		Screened 57'-59'
				59.5'-60' Gray clayey fine SAND w/10% shell fragments			SW		
				Terminated at 60', completed as ASW-91 Well development: Removed 10 gal @ 1 gpm, clear, no odor, trace fine sand					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 92
Geologist/Eng.: Zackary Munyer
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/24/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 2.3' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0-5' porthole 5-50' Drilled w/no sample					
	50 to 60			50'-55' Gray fine SAND, no odor			SP		
				55'-57' Gray fine SAND, loose, wet, no odor		80% (50-55)	SP		Screened 57'-59'
				57'-59.5' Gray fine SAND, no odor			SP		
				59.5'-60' Gray clayey fine SAND, no odor		80% (55-60)	SP		
				Terminated at 60', completed as ASW 92 Well development: 10 gal removed @ 1 ppm, clear, no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 93
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/24/17
Date Completed: 1/24/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 2.4' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/no sampling					
	50 to 60			50'-55' Gray fine SAND, no odor		80% (50-55)	SP		
				55'-57.5' Gray fine SAND, loose, wet, no odor			SP		Screened ~57'-59'
				57.5'-58' Gray fine SAND w/clay nodules, no odor			SP		
				58'-60' Gray fine SAND, loose, no odor		70% (55-60)	SP		
				Terminated @ 60', completed as ASW-93					
				Development: Removed 10 gal @ 1 gpm, clear, no odor, w/trace fine SAND					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 94
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/23/17
Date Completed: 1/23/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 2.7' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0 to 50				0'-5' Post hole 5'-50' Drilled w/no sampling					
50				50'-55' Gray fine SAND, no odor		95% (50-55)	SP		
55				55'-57' Gray fine SAND, loose, wet, no odor			SP		Screened 57'-59'
57 to 60				57'-57.5' Gray fine SAND w/trace dissolved clay, no plasticity, no odor		95% (55-60)	SP		
				57.5-59.5 Gray fine SAND w/trace fines, loose, wet, no odor			SP		Well development: Removed 10 gal @ 1 gpm clear, no odor
				59.5-60 Gray fine SAND w/5% clay + 10% shell fragments			SW		
				Terminated @ 60', completed with ASW94					

Reviewed by: Mike Bunt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 95
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/20/17
Date Completed: 1/20/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 2.70'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 55	—	NA	0'-5' Post hole 5'-55' Drilled w/ NO sampling					
	55 TO 60			55'-60' Brown Fine SAND Loose, wet, no odor		75	SP		Screened: 57.1 to 59.1 ft BLS
				well development: Removed ~10 gallons @ ~1gpm, cloudy, no odor. Boring terminated at 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -96
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/20/17
Date Completed: 1/20/17
Borehole Diameter: 5.9"
Borehole Depth: 60
Depth to Water: 2.20'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 55	—	NA	0'-5' Post hole 5'-55' Drilled w/ no Sampling					
	55 TO 60			55'-60' BN fine SAND, Loose, wet, no odor		75	SP		Screened: 57 to 59 ft BLS
				Well development: Removed ~10 gallons @ ~1gpm, cloudy, no odor Boring terminated at 60' ft BLS					

Reviewed by: Mike Burt

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-24 97
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/20/17
Date Completed: 1/20/17
Borehole Diameter: 5.9"
Borehole Depth: 60.0 ft BLS
Depth to Water: 3.00 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 55	—	NA	0'-5' Post hole 5'-55' Drilled w/ no sampling					
	55 TO 60			55' to 60' BN. fine SAND, loose, wet, no odor		60	SP		Screened: 57.2 to 59.2 ft BLS
				Well Development: Removed ~10 Gallons @ ~ 1 gpm, cloudy, no odor. Boring terminated at 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 98
Geologist/Eng.: Zackary Munyer
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/23/17
Date Completed: 1/23/17
Borehole Diameter: 5.9 "
Borehole Depth: 60'
Depth to Water: 2.8' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 55			0-5' Post hole 5-55' Drilled w/no sampling		-	-	-	- - - -
55 2M	55 to 60			55'-60' Gray fine SAND w/trace clay nodules, loose, wet, ~~no odor~~ ~~2M~~ to 59' Below 59' Gray fine SAND w/trace clay nodules, no odor		80%	SP SP		Screened ~57'-59'
57 2M				Terminated @ 60' and completed as ASW-98					
59 2M				Well development : Removed 14 gal @ ~1 ppm, Clear, no odor, trace fine sand					
~59'									

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 99
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/23/17
Date Completed: 1/23/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 55			0'-5' Post hole 5'-55' Drilled w/no sampling					
	55 to 60			55'-59' Gray fine SAND, loose, wet, no odor 59'-60' Gray fine SAND, loose, no odor		80%	SP SP		Screened ~57'-59'
				Terminated at 60' and completed as ASW-99 Well development: Removed 10 gal @ 1 gpm Clear, no odor, trace fine sand					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW100
Geologist/Eng.: P. Siemon
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/14/17
Date Completed: 1/19/17
Borehole Diameter: 5.5"
Borehole Depth: 60'
Depth to Water: 3.75'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 55	—	NA	0-5' Post hole 5'-55' Drilled w/ no Sampling					
	55 to 60			55'-60' Brown fine SAND, loose, wet, no odor		NR			Screened: 57.3 to 59.3 ft BLS
				Well development: Removed ~10 gallons @ ~1gpm, Cloudy, no odor Boring terminated at 60 ft BLS					

Reviewed by: Mike Brunt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 101
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/30/17
Date Completed: 1/30/17
Borehole Diameter: 5-9"
Borehole Depth: 60'
Depth to Water: 2.8'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' post hole 5'-50' drilled w/no sampling					
	50 to 55			50'-55' Gray fine SAND, no odor		NR	SP		Screened 57'-59'
	55 to 60			55'-59.8' Gray fine SAND, no odor			SP		
				59.8'-60' Gray fat CLAY, no odor			CH		
				Terminated @ 60', completed as ASW-101					Well development: Removed 12 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 102
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/30/17
Date Completed: 1/30/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.3'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' post hole 5'-50' drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND, no odor		NR	SP		Screened 57'-59'
	55 to 60			55'-60' Gray fine SAND w/ interlaminated clay, no odor			SP		
				Terminated @ 60', completed as ASW-102					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 103
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND, no odor		NR	SP		Screened 57'-59'
	55 to 60			55'-60' Gray fine SAND w/ trace clay, no odor			SP		
				Terminated @ 60', completed as ASW-103					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 104
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.6'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND, no odor		NR	SP		Screened ~57'-59'
	55 to 60			55'-59' Gray fine SAND, no odor 59'-60' Gray fine SAND w/ trace clay, no odor			SP SP		
				Terminated @ 60', completed as ASW-104					Well development: Removed 10gal @ 1gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 105
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/27/17
Date Completed: 1/27/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: 2.71 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5': Post-holed					Well Development: ~10 gal @ ~1 gpm; cloudy to clear, no OD
				5-50': No sample collected					
50				50'-51.5': No recovery					
				51.5': SAND, fine, grey, wet, loose, no OD			SP		
52				52.8': SAA w/ CLAY nodule (interbedded/ interlaminated CLAY in SAND) ~5"			SP/CH		
						102/120	SP		
54									55' SCREENED 57' (Approximately)
				55.3': SAA w/ CLAY nodule, ~3"			SP/CH		
							SP		
56				56.2': SAND, grey, fine, moist w/ interbedded + interlaminated CLAY			SP/CH		
				56.8': SAA, but no CLAY			SP		
				57.5': SA 56.2'-56.8' but more CLAY			SP/CH		
58									
60				1" Shell frags w/ SAND + CLAY @ bottom			SP/GC/CH		
				End of boring: 60 ft BLS					

Reviewed by: M Cook

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 106
Geologist/Eng.: Mike Burcham
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/27/17
Date Completed: 1/27/17
Borehole Diameter: 5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5': Post-holed 5-50': No sample collected					Well Development: ~10 gal @ ~1 gpm clear; no OD
50				50'-52': No recovery					
52				52': SAND, fine, gray, moist loose except for some minor CLAY laminations @ ~52.6' SAA but wet & no CLAY			SP/CH SP		
54				53.8': SAA w/ a CLAY nodule (SAND & CLAY interbedded/interlaminated) 4" long		96/120	SP/CH		
56				56.5': SAND, fine, grey, moist w/ CLAY interbedded & interlaminated @ 57.0' observe some very soft, wet CLAY (amount of CLAY increases w/ depth)			SP SP/CH		55' SCREENED 57' (Approximately)
58				58.7': 2" layer of SAND 59.0': SAND, fine, grey, moist w/ interbedded/interlaminated CLAY (more than 56.5'-58.7') 59.8': shell frags (~5%) w/ sand; moist			SP SP/CH GC/SP	MB	
60				End of boring: 60 ft BLS					

Reviewed by: M Conti

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 107
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.95 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No samples collected					Well development: ~12 gal @ ~1 gpm, cloudy to clear
50'				50'-59.75': SAND, gray, very fine, wet, loose		120/120	SP		
52'									
54'									
56'									
57'									
58'									SCREENED (Approximately)
59'									
60'				59.75'-60': ~~SAND~~ (MW) Sandy CLAY, grey, very fine, high plasticity End of boring 60 ft BLS			CH	CH (MW)	

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW i08
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.05 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed					well development: ~10 gal @ ~1 gpm; cloudy to clear
				5'–50': No samples collected					
50'				50'–54.5': SAND, grey, very fine, wet, loose		12/120	SP		
52'									
54'				54.5'–55': SAA, moist, trace CLAY					
				55'–57': SAND, grey, very fine, wet, loose					
56'									
				57'–57.2': SAA, moist, trace CLAY					57'
				~~57.2–58.5'~~ 58.5' (MW): SAND, grey, very fine, wet loose					
58'									SCREENED (Approximately)
				58.5'–~~58.75'~~ 59.5' (MW): SAA, trace CLAY					59'
				59.5'–60': Sandy CLAY, grey, very fine, ~~wet~~ (MW), high plasticity			CH		
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 109
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~2.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed					Well development: ~13 gal @ ~1 gpm, cloudy to clear
				5'–50': No samples collected					
50'				50'–54': SAND, grey, very fine, wet, loose		120/120	SP		
52'									
54'				54'–54.2': SAA, moist, trace CLAY 54.2'–56.5': SAND, grey, very fine, wet, loose					
56'									
				56.5–~~56.75~~ 57' (MW): SAA, moist, trace CLAY 57'–59': SAND, grey, very fine, wet, loose					57'
58'									SCREENED ~~SAA~~ (MW) (Approximately)
				59'–59.25': SAA, moist, trace CLAY 59.25'–59.5': SAND, grey, very fine, wet, loose 59.5'–60': SAA with shell fragments					59'
60'				End of boring 60 ~~ft~~ BLS					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 110
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.45 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No samples collected					Well development: ~15 gal @ ~1 gal/min; cloudy to clear
50'				50'-50.5': SAND, grey, very fine, moist ~~wet~~ (W), loose		120/120	SP		
				50.5'-50.75': SAA, trace CLAY					
				50.75'-51.5': SAND, grey, very fine, moist, loose					
52'				51.5'-55.5': SAA, wet					
54'									
				55.5'-55.7': SAA, trace CLAY					
56'				55.7'-59': SAND, grey, very fine, wet, loose					
									57'
58'									SCREENED (Approximately)
				59': SAA with shell fragments, trace CLAY					59'
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 111
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.10 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed 5'–50': No samples collected					well development: ~10 gal @ ~1 gpm, cloudy to clear
50'				50' – 51': SAND, grey, very fine, wet, loose, trace clay		120/120	SP		
				51'–52': SAA, with clay interbedded/interlaminated					
52'				52'–58.5': SAND, grey, very fine, wet, loose, trace clay					
54'									
56'									
									57'
58'									SCREENED (Approximately)
				58.5'–59': SAND with clay interbedded/interlaminated, grey, very fine, wet, loose					59'
				59'–59.5': SAA, moist					
				59.5'–60': SAA with shell fragments, trace clay					
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 112
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.45 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed					Well development: ~12 gal @ ~1 spm, cloudy to clear
				5'-50': No samples collected					
50'				50'-57.5': SAND, grey, very fine, wet, loose, trace clay		120/120	SP		
52'									
54'									
56'									
				57.5'-57.75': Clayey SAND, grey, very fine, wet, loose			SC		57'
58'				57.75'-59': SAND, grey, very fine, wet, loose, trace clay interbedded/interlaminated			SP		SCREENED (Approximately)
				59'-60': SAND with clay interbedded/interlaminated, grey, very fine, wet, loose					59'
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW113
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.60 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed					Well development: ~12 gal @ ~1 gpm, cloudy to clear
				5'–50': No samples collected					
50'				50'–57': SAND, grey, very fine, wet, loose, trace clay interbedded/interlaminated		120/120	SP		
52'									
54'									
56'									
				57'–~~58~~ 59.75': SAA, with clay interbedded/interlaminated (increased clay content compared to above)					57' SCREENED 59'
58'				~~58'~~ (M)					
				59.75'–60': Sandy CLAY, grey, very fine, high plasticity, soft			CH		
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 114
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.40 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'–5': Post-holed					Well development: ~12 gal @ ~1 gpm; cloudy to clear
				5'–50': No samples collected					
50'				50'–54.5': SAND, grey, very fine, wet, loose		120/120	SP		
52'									
54'				54.5'–55': SAND with clay, grey, very fine, wet, loose					
				55'–57': SAND, grey, very fine, wet loose					
56'									56.5'
				57'–58.5': ~~SAND~~ SAA with clay					SCREENED (Approximately)
58'				–58.75':					58.5'
				58.5' Sandy CLAY, grey, very fine, high plasticity			CH		
				58.75'–59.5': SAND with shell fragments grey, very fine, wet, loose			SP		
				59.5'–60': SAA, trace clay, increased shell fragments					
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burt

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 115
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.70ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No samples collected					well development: ~20 gal @ ~1 gpm; cloudy to clear
50'				50'-59': SAND, grey, very fine, wet, loose, trace clay interbedded/interlaminated		120/120	SP		
52'									
54'									
56'									
57'									
58'									SCREENED (Approximately)
59'									
60'				59.5'-59.75': SAND with clay and shell fragments, @ grey, very fine, wet loose, chocolate colored up to 1.5" in length 59.75'-60': Sandy CLAY with shell frag, grey, moist, firm End of boring 60 ft BLS			CL		

Reviewed by: Mike Burt

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 116
Geologist/Eng.: Whitney Morrison
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: ~3.40 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5': Post-holed 5'-50': No samples collected					Well development: ~10 gal @ ~1 gpm, Cloudy to clear
50'				50' - 51.5': SAND, grey, very fine, wet, loose		120/120	SP		
				51'-51.5': SAA, trace clay					
52'				51.5'-53.5': SAND, grey, very fine, wet, loose					
				~~53.5'~~ (MW)					
				53.5'-54.5': SAA, trace clay					
54'				~~54'~~ (MW)					
				54.5'-55': SAA, with clay					
				55'-58.25': SAND, grey, very fine, wet, loose					
56'									56'
									SCREENED (Approximately)
58'				58.25'-58.5': Sandy CLAY grey, very fine, high plasticity			CH		58'
				58.5'-59': SAND with shell fragments, grey, very fine, moist, loose, trace clay			SP		
				59'-60': SAA, increased shell fragments					
60'				End of boring 60 ft BLS					

Reviewed by: Mike Burch

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 117
Geologist/Eng.: Alex Mercanski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.48 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
50				SAND, fine, grey, wet no observed staining or odor			SP		
52						100%			
				SAA w/ clay, cohesive, but not plastic			SP-SC		
54				SAA, trace clay					
							SP		
				SAA, no clay					
56									
									~57'
						100%			SCREENED
58				SAA trace clay					
				SAND w/ clay interbedded w/ low plasticity sandy clay. Increasing to ~50% sandy clay w/ depth			SP-SC/ CH		
				SAND w/ clay and ~50% shell fragments up to ½"			SC		~59'
60				60' BLS Bottom of borehole					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 118
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: ~~5.0~~ ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.30 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BGS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BGS not sampled					
50				NO recovery	NR				
				SAND, fine, grey, wet, no observed staining or odors			SP		
52				3" lense of SAND w/ clay		0%	SP-SC		
				SAND, fine, grey, trace clay					
				SAA, no clay					
54							SP		
				SAA, trace clay					
56				SAA, no clay		100			~57' SCREENED ~59'
				SAA, trace clay, ~5% shell frags (A) frags up to 1/4", low cohesion					
58				SAA, increasing shell content to 15%					
				SAA, w/ clay, low cohesion, no plasticity, ~25% shell			SP-SC		
				SAA, trace clay, ~30% shell			SP		
60				60' BGS bottom of borehole					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 119
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above."

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: ~5.4"
Borehole Depth: ~60'
Depth to Water: 2.97 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
50				SAND, fine, grey, wet, no observed staining or odor			SP		
52						100			
				SAA w/ clay, cohesive, but no plasticity			SP-SC		
54				SAA, no clay			SP		
				SAA trace clay					
				~3" SAA, w/ clay, cohesive, no plasticity			SP-SC		
56				SAA, trace clay			SP		~57'
				SAA, no clay		100			SCREENED
58				SAA w/ clay, ~10% shell up to ¼"			SP-SC		
				clayey SAND w/ ~20% shell, low to no plasticity			SC		~59'
				SAA w/ clay and ~40% shell up to 1"			SP-SC		
				SAA, trace clay			SP		
60				100' BLS bottom of borehole					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 12D
Geologist/Eng.: Alex Wierzbicki
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.53 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post-holed					well developed w/ 10 gal @ ~1 gpm cloudy grey to clear.
				5'-50' BLS not sampled					
50				SAND, fine, wet, grey, no observed staining or odor			SP		
				SAA interbedded w/ clayey SAND			SP/SC		
52				SAA, no clay			SP		
						100			
54				SAND w/ clay, grey			SP-SC		
				SAND, fine, grey, no clay			SP		
				SAA, trace clay		—	SP		~56'
56				SAA w/ clay, cohesive, not plastic, ~5% shell frags up to 1/4"			SP-SC		SCREENED
						100			
58				SAND w/ clay interbedded w/ clayey SAND with ~20% shell frags w/ to 1/4"			SP/SC		~58'
				SAND w/ clay and ~40% shell frags up to 1/2"			SP-SC		
60				60' BLS bottom of borehole					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 12 1
Geologist/Eng.: Alex Lukaszinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.20 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					Well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
50				SAND, fine, grey, wet, no observed staining or odor.			SP		
				SAA, trace clay					
				SAA, no clay					
52				SAA w/ ~2" nodules SAND w/ clay (cohesive, not plastic).		100	SP/ SP-SC		
				SAA, no nodules, trace clay			SP		
54				SAND w/ clay, cohesive, not plastic			SP-SC		
				SAND, fine, grey, no clay			SP		
				SAA, w/ clay			SP-SC		
				SAA ~~trace~~ no clay					
56							SP		~57'
									SCREENED
				SAA interbedded w/ SAND w/ clay		100	SP/ SP-SC		
58				SAND w/ trace clay			SP		
				SAA, w/ clay and ~15% shell up to 1/4" (not plastic)			SP-SC		~59'
				SAA, ~35% shell, slight cohesion					
60				60' Bottom of borehole					

Reviewed by: Mike Burch

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BORING LOG

Page 1 of 1

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW R2
Geologist/Eng.: Alex Warcholo
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.18 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
50				SAND, fine, grey, wet, trace clay no observed staining or odor					
				SAA, no clay					
				SAA, trace clay			SP		
52				SAA, no clay		100			
54									~56'
56				SAA w/ ~2" nodules SAND w/ clay (cohesive, not plastic			SP/SP-SC		SC REMED
				SAA, no nodules, trace clay		100	SP		
58				SAA interbedded w/ SAND w/ clay			SP/SP-SC		~58'
				SAND w/ clay			SP-SC		
				clayey SAND, soft, not plastic w/ 10% shell up to ½"			SC		
				SAND, ~30% shell, cohesive, not plastic w/ clay			SP-SC		
				SAND w/ trace clay, ~50% shell up to ½"			SP		
60				60' BLS Bottom of borehole					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 123
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.22 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' bgs post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled.					
50				NO recovery	NR				
				SAND, fine, grey, wet no observed staining or odor					
52						90%	SP		
54									
				SAA, trace clay					
				~~SAA~~ SAND w/ clay, cohesive, not plastic			SP-SC		
56				SAND, fine interbedded with SAND w/ clay			SP/SP-SC		~57'
				SAND, fine, trace clay			SP		
				SAA, nodules of SAND w/ clay		100%	SP/SP-SC		SCREENED
58				~~SAA~~ SAND, fine, trace clay			SP		
				clayey SAND, 10% shell frags up to 1/4" low to no plasticity.			SC		~59'
				SAND w/ clay and shell frags up to 1"			SP-SC		
60				60' Bottom of borehole					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 124
Geologist/Eng.: Alex Marzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.63 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed w/0 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
50				~3" SAND w/ clay, fine, grey, wet, no observed staining or odor			SP-SC		
				SAA, no clay					
							SP		
52						NR			
				SAA w/ clay, cohesive, not plastic			SP-SC		
54				SAA, no clay			SP		
				SAA interbedded with SAND w/ clay			SP/SP-SC		
				SAND, trace clay, grey, wet, fine					~56'
56							SP		SCREENED
				SAND w/ clay, cohesive, not plastic fine			SP-SC		
58				Sandy CLAY w/ ~10% shell up to ½" low to medium plasticity, firm.			CH		~58'
				SAND w/ clay and ~30% shell up to ½"			SP-SC		
				SAA, trace clay			SP		
60				60' BLS Bottom of borehole					

Reviewed by: Mike Burton

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-125
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.7

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND w/ interlaminated clay, no odor		NR	SP		
	55 to 60			55'-60' Gray fine SAND w/ trace clay, no odor			SP		Screened: 57.2 to 59.2 ft BLS
				Terminated @ 60', completed as ASW-125					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 126
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/2017
Date Completed: 2/1/2017
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.7'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND w/ trace clay, no odor			SP		Screened ~ 57'-59'
				55'-59.7' Gray fine SAND w/ trace clay, no odor		NR	SP		
	55 to 60			59.7'-60' Gray fine SAND w/ shell fragments & trace clay, no odor			SP		
				Terminated @ 60', Completed as ASW-126					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 127
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 34'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-53' Gray fine SAND w/ trace clay, no odor			SP		Screened ~57'-59'
				53'-55' Gray fine SAND w/ interlaminated clay, no odor			SP		
	55 to 60			55'-59.1' Gray fine SAND w/ trace clay, no odor		NR	SP		
				59.1'-59.5' Gray fat CLAY, no odor			CH		
				59.5'-60' Gray sandy CLAY w/ shell fragments, no odor			CH		
				Terminated @ 60', completed as ASW-127					Well development: Removed 10 gal @ 1gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 128
Geologist/Eng.: Ken Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 34'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-53' Gray fine SAND w/ trace clay, no odor			SP		Screened ~57'-59'
				53'-55' Gray fine SAND, no odor			SP		
	55 to 60			55'-58.7' Gray fine SAND w/ trace clay, no odor		NR	SP		
				58.7'-59.2' Gray fat CLAY, no odor			CH		
				59.2'-60' Gray fat CLAY w/ shell fragments and sand			CH		
				Terminated @ 60', completed as ASW-128					well development. Removed 10 gal @ 1gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 129
Geologist/Eng.: Alex Warnisko
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates (i.e. same as above)

Page 1 of 1
Date Started: 2/9/17
Date Completed: 2/9/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.01 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
51				SAND, fine, grey, wet, loose, no observed staining or odor					
52							SP		
53						100			
54									
55									
56									57'
57				SAA, trace shell up to 1/4"		100			SCREENED
58				SAA, trace clay, ~5% shell up to 1"					59'
59				clayey SAND, ~5% shell up to 1/4", low to no plasticity			SC		
				SAND w/ clay, ~5% shell			SP-SC		
				SAND, trace clay, ~5% shell cohesion			SP		
60				SAND w/ clay, trace shell			SP-SC		
				60' Bottom of borehole					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW130
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA "indicates "same as above"

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.80 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post-holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
50				SAND, fine, grey, wet, loose, no observed staining or odor					
52						100	SP		
54									
56				SAA, trace clay					~57'
				SAA interbedded w/ SAND w/ clay (cohesive, not plastic)		100	SP/SP-SC		SCREENED
58				SAA, no interbedding, trace clay					
				SAA w/ ~10%, shell up to 1" ~~(clay end)~~ AW			SP		
				SAA, ~30%, shell					~59'
60				60' BLS bottom of borehole					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 131
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "Same as above"

Page 1 of 1
Date Started: 2/6/17
Date Completed: 2/6/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60 ft BLS
Depth to Water: 3.02 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' post-holed					Well development ~10 gal @ ~1 gpm cloudy gray to clear
				5'-50' no sample collected					
50				SAND, fine, gray, wet no observed odor or staining			SP		
52				SAA, trace clay, low to no cohesion/plasticity		100%	SP-SC		
54				SAA, no clay			SP		
56				SAA, trace clay, low to no cohesion/plasticity		100%	SP-SC		~57' SCREENED ~59'
58				SAA, no clay, ~15% shell fragments up to 1/2"			SP		
60				SAA w/ some clayey SAND nodules (<2") low to no cohesion/plasticity End of Boring (60' BLS)			SP/SP-SC		

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 132
Geologist/Eng.: Alex Warrington
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/9/17
Date Completed: 2/9/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.86 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5-50' BLS not sampled					
50				SAND, fine, grey, wet, no observed staining or odor, ~5% shell up to ¼"			SP		
				SAA, trace clay, no shell					
52				SAA, no clay		100			
54									
						—			
56				SAA, ~5% shell up to ¼"					~57'
						100	SP		SCREENED
58				SAA, ~15% shell up to ¼", trace clay					
				SAA, no clay, ~40% shell up to ½"					~59'
60				SAA, w/ clay, cohesive, wet plastic 60' Bottom of borehole			SP-SC		

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 133
Geologist/Eng.: Alex Warzanski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/9/17
Date Completed: 2/9/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.88 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
50				~~SAND, fine, grey, loose, wet no observed staining or odor~~ No Recovery	NR				
				SAND, fine, grey, loose, wet no observed staining or odor		80	SP		
52				SAA, trace clay					
				SAA, no clay					
54									
56				SAA, w/ clay, cohesive, not plastic			SP-SC		
				SAA, no clay					~57'
				SAA, trace shell up to 1/4"		100	SP		SCREENED
58				SAA, ~5% shell up to 1/4"					
									~59'
				SAA interbedded w/ SAND w/ clay, ~10% shell			SP/SP-SC		
				SAA, no interbedding/clay, ~30% shell			SP		
60				SAND w/ clay and ~30% shell up to 1/2" 60' Bottom of borehole			SP-SC		

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 134
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.03 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post-holed					well developed ~10 min @ ~1 gpm
				5'-50' BLS not sampled					cloudy grey to clear
50				SAND, fine, grey, wet, loose, no observed odor or staining			SP		
				SAA, trace clay					
52				SAA no clay		100			
				SAA, w/ clay, cohesive, not plastic			SP-SC		
54				SAA, no clay			SP		
				SAA, w/ clay, cohesive, not plastic			SP-SC		
56				SAA, no clay			SP		~57'
				SAA trace clay		100			SCREENED
58				clayey SAND, cohesive, not plastic			SC		
				SAA, trace clay, ~5% shell up to ¼"			SP		~59'
				SAA, w/ clay, ~25% shell			SP-SC		
60				SAA ~5% shell					
				100' BLS bottom of borehole					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 135
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above."

Page 1 of 1
Date Started: 2/6/17
Date Completed: 2/6/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.22 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS posthole'd					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS no sample collected					
52				SAND, fine, grey, wet no observed staining or odor			SP		
				SAA, trace clay, no plasticity			SP-SC		
52				SAA, no clay		100%			
54				SAA			SP		
56									~57' SCREENED
						100%			
58				SAND w/ clay (FW) SAA, w/ ~~clayey SAND~~ low to no plasticity (discrete nodules of SAND w/ clay, ~30%)			SP/SP-SC		~59'
				clayey SAND, cohesive, but no plasticity, grey, wet			SC		
60				End of borehole [60' BLS]					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 136
Geologist/Eng.: Alex Warzynski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "Same as above"

Page 1 of 1
Date Started: 2/16/17
Date Completed: 2/16/17
Borehole Diameter: ~5.6"
Borehole Depth: ~60'
Depth to Water: 3.27 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well Developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' no sample collected					
50				SAND, fine, grey, wet no observed staining or odor			SP		
52				SAA, w/ trace clay - cohesive not plastic					
				SAA, no clay/cohesion		100%			
54							SP		
56						100%	SP		~57'
				SAA interbedded with clayey SAND (clayey SAND has no plasticity)			SP-SC		SCREENED
58				SAA; trace clay, very slight cohesion			SP		
				clayey SAND, no plasticity w/ ~15% shell fragments up to 1/4"			SC		~59'
				SAND w/ clay + shell frags, fine, grey ~30% shell frags			SP-SC		
60				60' Bottom of borehole					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 137
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/9/17
Date Completed: 2/9/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.11 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' bgs post-holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5-50' bgs not sampled					
51				SAND, fine, wet, grey, loose no odor or staining observed			SP		
52						100			
54									
56				SAA, trace clay					
				SAA, no clay		100			~57'
				SAA, trace clay					SCREENED
58				SAA, interbedded w/ SAND w/ clay			SP/SP-SC		
				SAA, no interbedding, trace clay			SP		~59'
				SAND w/ clay, soft, not plastic, ~5% shell up to ¼"			SP-SC		
				SAA, trace clay, ~~soft~~ loose			SP		
60				SAA, no clay					
				60' bgs bottom of borehole					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 138
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates " same as above"

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.96 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					Well developed ~10 min @ ~1 gpm
				5'-50' BLS not sampled					cloudy grey to clear
50				No Recovery	NR				
				SAND, fine, grey, wet, loose no observed staining or odor			SP		
52				SAA trace clay		90%			
				SAA, no clay					
54									
				SAA, trace clay					
				SAA no clay					
56									
				SAA interbedded w/ SAND w/ clay cohesive, not plastic		100	SP/SP-SC		~57'
				SAA no clay					SCREEN
58				SAA trace clay			SP		
				clayey SAND, soft, not plastic			SC		
				SAND w/ trace clay			SP		
				SAA interbedded w/ SAND w/ clay + ~5% shell up to 1/4"			SP/SP-SC		~59'
				SAA, 20% shell					
60				SAND, trace clay ~40% shell up to 1/4"			SP		
				60' Bottom of borehole					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW139
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/6/17
Date Completed: 2/10/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.12 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post-holed					Well developed @ ~10 mm ~1 gpm cloudy grey to clear
				5-50' BLS no sample collected					
50				SAND, fine, grey, wet no observed staining or odor small (<1") nodules w/ trace clay					
				SAA, no trace clay		NR	SP		
54									
56						NR			~57'
				SAA interbedded w/ SAND w/ trace clay			SP		SCREENED
58				Clayey SAND, no plasticity			SC		
				~~Clayey~~ SAND w/ trace Clay			SP		~59'
				Clayey SAND interbedded w/ Sandy CLAY			SC/ SP-SC		
				Clayey SAND ~~sandy CLAY~~ ~30% shell frags up to "4". Low to no plasticity			SC		
60				60' Bottom of borehole					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 140
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/9/17
Date Completed: 2/9/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.05 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
50				SAND, fine, grey, wet, loose, ~5% shell up to 1/4", no observed odor or staining			SP		
				SAA, no shell, trace clay					
52				SAA no clay					
				SAA, shell frags ~5% up to 2"		100			
				SAA, no shell					
54									
				SAA, trace clay, ~5% shell up to 1/4"					
				SAA, no shell or clay		—			
56									
				SAND, w/ clay, cohesive, not plastic, soft		100	SP-SC		~57'
				SAND, fine, grey, loose, no clay					SCREENED
58							SP		
				SAA, ~5% shell up to 1/4"					~59'
60				60' BLS bottom of borehole					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 141
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/9/17
Date Completed: 2/9/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.01 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
				5-50' BLS not sampled					
50				No Recovery	NR				
				SAND, fine, grey, wet, loose, no observed staining or odor			SP		
52				SAA, trace clay		80%	SP-SC		
				SAA w/ clay					
				SAA, no clay			SP		
54									
				SAA, trace clay					
56						100%	SP/SP-SC		~57'
				SAA interbedded w/ SAND w clay (cohesive, not plastic)		C/N	SP		SCREENED
				SAA, no clay			SC		
58				clayey SAND, cohesive, not plastic, soft			SP		~59'
				SAND w/ trace clay + ~15% shell up to ¼"					
				SAA w/ ~30% shell up to ½"			SP-SC		
				SAND w/ clay, cohesive, not plastic, 30% shell					
60				60' Bottom of borehole					

Reviewed by: Mike Burns

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 142
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.05 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 gpm @ ~1 gpm cloudy grey to clear
				5'-50' BLS not sampled					
50				NO recovery		NR			
				SAND, fine, grey, wet, loose, no observed odor or staining			SP		
52						80			
				SAA, w/ clay, no plasticity			SP-SC		
54				SAA, no clay			SP		
									~57' SCREENED ~59'
56				SAA, w/ clay, no plasticity			SP-SC		
				SAA, no clay			SP		
				SAA, trace clay		100			
58				SAA interbedded w/ SAND w/ clay (no plasticity)			SP/SP-SC		
				SAND w/ clay (no plasticity) and ~5% shell up to 1/4"			SP-SC		
				Clayey SAND, soft, no plasticity, ~5% shell			SC		
				SAND ~~w/ clay~~, ~30% shell up to 1/4"			SP-SC		
60				60' Bottom of borehole					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 143
Geologist/Eng.: ALEX Warenski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/10/17
Date Completed: 2/10/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.81 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					Well developed ~10 min at ~1 gpm
				5'-50' BLS not sampled					
50				SAND, fine, grey, wet, loose no observed staining or odor					
				SAA, trace clay			SP		
52				SAA, no clay		100			
				SAA, trace clay					
				SAA, no clay					
54									
				SAA, w/ clay, cohesive, not plastic				SP-SC	
				SAA, no clay				SP	
				SAA, interbedded with clayey SAND (not plastic)				SP/SC	
56				SAA, no interbedding/clay				SP	~57'
				SAA interbedded w SAND w/ clay		100		SP/SP-SC	SCREENED
				SAA, no clay, ~5% shell up to 1/4"				SP	
58									~59'
				SAA, interbedded w SAND w/ clay				SP/SP-SC	
				SAND w/ ~~trace~~ clay and ~40% shell up to 1/2"				SP-SC	
60				Lost bottom of borehole					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 144
Geologist/Eng.: Alex Warzinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.92 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm
				5'-50' BLS not sampled					cloudy grey to clear
50				NO recovery	NR				
				SAND, fine, grey, wet, no observed odor or staining			SP		
52				SAA, trace clay		80%			
				SAA no clay					
				SAA trace clay					
56				SAA no clay					
				SAA w/ nodules of SAND w/ clay ~1", slightly cohesive			SP/SP-SC		~57'
				SAA, no nodules/clay		100%	SP		
58				SAA w/ clay			SP-SC		SCREENED
				SAA trace clay, ~5% shell up to ¼"					
				SAA, ~30% shell up to ½"			SP		~59'
60				60' BLS bottom of borehole					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 145
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.2'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' - Post-holed 5'-50' - Not sampled					
	50 to 55			50'-55' Gray fine SAND w/ interlaminated clay		NR	SP		Screened ~ 57'-59'
	55 to 60			55'-60' Gray fine SAND w/ interlaminated clay			SP		
				Terminated @ 60', completed as ASW-145					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 146
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.1'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND, no odor		NR	SP		
	55 to 60			55'-59.7' Gray fine SAND w/ trace clay, no odor 59.7'-60' Gray fat CLAY, no odor			SP CH		Screened: 57 to 59 ft BLS
				Terminated @ 60', completed as ASW-146					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 147
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/31/17
Date Completed: 1/31/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 2.9'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND w/ interlaminated clay, no odor	NR		SP		Screened 57'-59'
	55 to 57			55'-57' Gray fine SAND, no odor			SP		
	57 to 60			57'-60' Gray fine SAND, w interlaminated clay, no odor			SP		
				Terminated @ 60', completed as ASW-147					well development: Removed 10 gal @ 1gpm

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 148
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/1/17
Date Completed: 2/1/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: 3.6'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND w/ trace clay, no odor		NR	SP		Screened ~57'-59'
	55 to 60			55'-57' Gray fine SAND, no odor 57'-60' Gray fine SAND w/ interlaminated clay, no odor			SP SP		
				Terminated @ 60', Completed as ASW-148					Well development: Removed 10 gal @ 1gpm

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 149
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ ~~59.7~~ 59.65 ft BLS

Page 1 of 1
Date Started: 2/17/17
Date Completed: 2/17/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 60 ft BLS
Depth to Water: 3.51 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS post hole cleared					well developed @ ≈ 1.0 gpm for ≈ 10 minutes water gray to clear in color
50				5'-50' No sample collected					
50 ft BLS	50	N/A	N/A	Blue grey fine grain silty SAND wet, non plastic				N/A	
52 ft BLS				Same		85%	SM/SP		
54 ft BLS				Same					
55	55	N/A	N/A	Same					
56 ft BLS				Same with ~~SW~~ clayey material (10%) @ ≈ 56.5 ft BLS, ~~1/4~~ 1"			SM/SP		Screened @ 56.7'-58.7' BLS
58 ft BLS				Same as 50'-56.5 ft BLS		85%	SM/SP		
60 ft BLS	60								

Reviewed by: Mike Burke

Soil boring terminated at 60'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 150
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 59.57 ft BLS

Page 1 of 1
Date Started: 2/16/17
Date Completed: 2/16/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 60 ft BLS
Depth to Water: 3.91 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS Post hole cleared					Well developed ≈ 1.0 gpm for ≈ 10 min, water gray to clear in color
5				5'-50' BLS No sample collected					
50	60	N/A	N/A	Blue grey fine grain silty SAND, wet, non plastic					
52 ft BLS				Same		80%			
54 ft BLS	55	N/A		Same			SM/SP		
55	55		N/A						
56 ft BLS				Same					
				28" of Blue Grey sandy clay, med to low plasticity, wet			CL		Screened @ 56.6' - 58.6' BLS
58 ft BLS				Blue grey fine grain clayey SAND wet, low to no plasticity		90%	SC		
				Same as 50'-57' BLS					
60 ft BLS	60						SM/SP		

Soil boring TD ≈ 60 ft BLS

Reviewed by: Mike Burns

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW ~~15(c)~~ 15
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-14-17
Date Completed: 2-14-17
Borehole Diameter: ~ 5.9"
Borehole Depth: ~60'
Depth to Water: 2.95 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50 no same collected					well development 10 min @ 1gpm cloudy to clear
50				fine SAND (SP), grey, moist to wet		100	SP		
52									
54									
56									
				fine SAND w/ thin sandy (grey) CLAY stringers + nodules, plastic		100 (10% fo med	SP/SP-SC		
58				fine SAND (SP), grey			SP		screened ~57-59' BLS
				SAA, w/ shell frags ~30%			SP		
60				Soil boring terminated at 60'					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 152
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-14-17
Date Completed: 2-14-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50 no sample collected					Well development 10 min @ 1 gpm, cloudy to clear
50				fine SAND (SP), grey, wet			SP		
52				SAA		100			
54									
56									
58				sandy CLAY (SP-SC) med to high plasticity, grey, cohesive		100	SP/SC		screened
60				fine SAND (SP) w/ shell frags 60%			SP		
				Soil boring terminated at 60'					

Reviewed by: Mike Burton

Note: adjusted screen to ~~56.5~~ 56½ to 58.5 due to thickness + cohesiveness of SP SC & SC

58-59' BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 153
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 59.70 ft BLS

Page 1 of 1
Date Started: 2/16/17
Date Completed: 2/16/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 60 ft BLS
Depth to Water: 3.30 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS Post hole cleared					Well developed ≈ 1.0 gpm for ≈ 10 minutes water gray to clear in color
50 ft BLS 50	50	N/A	N/A	5'-50' BLS no sample collected				N/A	
				Blue grey fine grain silty SAND, non plastic, wet					
52 ft BLS				Same		90%			
54 ft BLS				Same			SM/SP		
55	55	N/A	N/A						
56 ft BLS				Same					AJC
									Screened @ 56.7'-58.7' BLS
58 ft BLS				Sandy CLAY (AJC)		90%			
				43" Blue grey ~~sandy clay~~, med to low Plasticity, wet			CL		
				same as 50'-58' BLS			SM/SP		
60 ft BLS 60	60								

Reviewed by: Mike Burton

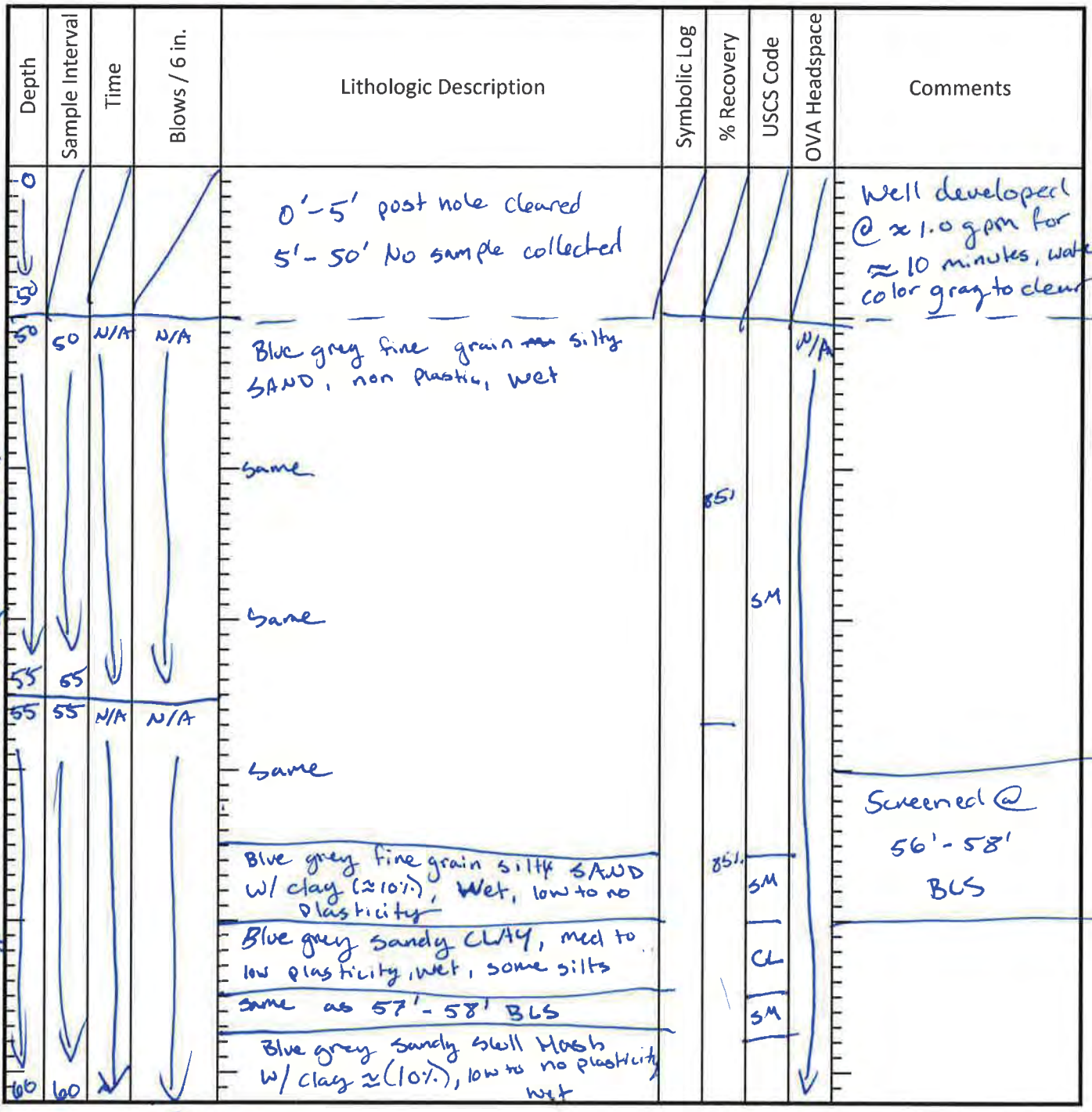
Soil boring TD ≈ 60 ft BLS

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 154
Geologist/Eng.: Jake Cram
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 59.0 ft BLS

Page 1 of 1
Date Started: 2/16/17
Date Completed: 2/16/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 60 ft BLS
Depth to Water: 3.18 ft BLS



Reviewed by: Mike Burt

soil boring TD ≈ 60 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 155
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 59.0 ft BLS

Page 1 of 1
Date Started: 2/17/17
Date Completed: 2/17/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 60 ft BLS
Depth to Water: 3.31 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS post hole cleared					well developed @ ≈ 1.0 gpm for ≈ 10 minutes water grey to clear
50	50			5'-50' BLS no sample collected					
50 ft BLS	50	50	N/A	N/A	Blue grey fine grain silty SAND, wet, non plastic			N/A	
52 ft BLS				same		80%			
54 ft BLS				same			60/SM		
	55	55							
	55	55	N/A	N/A					
56 ft BLS				same					screened @ 56'-58' BLS
58 ft BLS				same		80%			
60	60			same					
60 ft BLS									

Reviewed by: Mike Burt

soil boring TD ≈ 60 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 156
Geologist/Eng.: ~~SB~~ Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-13-17
Date Completed: 2-13-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.05 Ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50' No sample collected					Well development 10 min @ ~ 19gpm, cloudy to clear
50				SAND, fine, grey, wet			SP		
52				SAA		100	SP		
54									
56				SAA			SP		
58						100			Screened: 56.55' to 58.55' Ft BLS
				SAA			SP		
60				Soil boring terminated at 60'					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 157
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-13-17
Date Completed: 2-13-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 1.47 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 postholed 5-50 = no sample collected					well development 10 min @ 1 gpm, cloudy to clear
50				SAND, fine, grey, wet		100	SP		
52				SAA					
54							SP		
56						100			
58							SP		screened ~57-59' BLS
				SAA, Shell Frags ~60%		100			
60				Soil boring terminated at 60'			SP		

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 158
Geologist/Eng.: Ben Coffenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates Same as above

Page 1 of 1
Date Started: 2-14-17
Date Completed: 2-14-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 2.35 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50 no sample collected					well development 10 min @ 1 gpm, cloudy to clear
50				fine SAND (SP), gray, wet		100	SP		
52									
54				SAA					
56				SAA, shell frags 30%		100	SP		
58				sandy CLAY (SP-SC) w/ shell frags 50%, gray, low to med. plasticity			SP-SC		screened 57-59' bls
60				fine SAND (SP) w/ shell frags 40%, grey			SP		

Reviewed by: Mike Burt

Soil boring terminated at 60'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 159
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-14-17
Date Completed: 2-14-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.23 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 posthoked 5-50 - no sample collected					well development 10 min @ 1gpm, cloudy to clear
50				fine SAND (SP), grey, wet			SP		
52				SAA, w/ sandy CLAY trace stringers approx. 1" in thickness		NR	SP/SC		
54				SAA, (SP)			SP		
				SAA					
56				SAA - sandy CLAY trace stringers fine SAND (SP)			SP-SC SP		
58				SAA			SP		screened 57-59' BLS
				sandy CLAY (SP-SC), low plasticity			SP-SC		
60				fine SAND (SP) w/ shell frags 40% w/ small trace clayey sand					

Reviewed by: Mike Burt

Soil boring terminated at 60'

COTIS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-6100
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/9/17
Date Completed: 2/9/17
Borehole Diameter: 6"
Borehole Depth: 100'
Depth to Water: 2.80'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0 to 5': post hole. 5 to 50': sonic drilling, no sampling					
	50 to 55'	1345		50-51': no recovery 51-55': SAND, gray, fine grain, loose, saturated		85%	SP		no odor
	55 to 100'			55-56.5': no recovery 56.5-100': SAND, gray, fine grain, loose, saturated			SP		
				boring terminated @ 100' bls w/ screen ~57-59' bls. well development: 10 gal @ 1gpm. → clear, no odor.					

Reviewed by: Mike Burch

CCITS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW0101
Geologist/Eng: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/9/17
Date Completed: 2/9/17
Borehole Diameter: 6"
Borehole Depth: 100'
Depth to Water: 2.60'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0 to 5': post hole 5 to 50': sonic drilling, no sampling					
	50 to 55'	15:20		50 to 53': no recovery 53 to 55': SAND, fine, gray, loose, saturated		30%	SP		no odor
	55 to 60'			55 to 60': same as above.		90%	SP		
				boring terminated @ 60' bls w/ screen ~57-59' bls. well development: 10 gal @ 1gpm. → clear, no odor.					

Reviewed by: Mike Burt

CCITS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW ~~01182 (AB)~~ 01162
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/9/17
Date Completed: ~~2/9/17 (AB)~~ 2/10/17
Borehole Diameter: 10"
Borehole Depth: 60'
Depth to Water: 3.20'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole 5-50': sonic drilling, no sampling					
	50 to 55'	7:35		50-55': SAND, gray, fine grain, loose, wet		30%	SP		no odor
	55 to 60'			55-58': same as above, saturated. 58-60': same as above, saturated, trace shells			SP		
				boring terminated @ 60' bls w/ screen ~57-58' bls. well development: 10 gal @ 1gpm → clear, no odor.					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 163
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-13-17
Date Completed: 2-13-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 1.03 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 postholed 5-50 not sampled					Well development 10 min @ 1 gpm, cloudy to clear
50				fine SAND (SP), gray, wet		100	SP		
52									
54				SAA					
56									
				clayey SAND, gray, wet, low to med. plasticity		100	SP-SC		Screened: 56.7 to 58.7 ft BLS
58									
				fine SAND (SP) w/ shell frags 60%.			SP		
60				Soil boring terminated at 60'					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 164
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-14-17
Date Completed: 2-14-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.15 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' post holed 5-50 no sample collected					Well development. ~10 min at ~1 gpm
50				fine SAND (SP), grey, wet					
52				SAA		100	SP		
54				SAA					
56									
58				SAA w/ sandy CLAY stringers + nodules, low plasticity fine SAND (SP), grey, wet sandy CLAY (SP-SC), low to med. plasticity, fine SAND w/ shell fragss 40%		100	SP SP-SC SP SP-SC SP		screened ~54-59' BLS
60									

Reviewed by: Mike Burt

soil boring terminated at 60'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 165
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total Depth of well measured ≈ 59.9 ft BLS

Page 1 of 1
Date Started: 2/16/17
Date Completed: 2/16/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 60 ft BLS
Depth to Water: 3.28 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS post hole cleared					well developed @ ≈ 1.0 gpm for ≈ 10 min water gray to clear in color
5				5'-50' BLS no sample collected					
50 ft BLS	50	N/A	N/A	Blue grey/grey fine grain silty SAND, wet, non plastic		NR	NR		
52 ft BLS				same					
54 ft BLS				same					
55	55								
56 ft BLS	55	N/A	N/A	same					
				Blue grey fine grain silty SAND w/ clay (≈10%), wet, low to no plasticity					Screened @ 56.9'-58.9' ft BLS
58 ft BLS				Blue grey ~~fine grain~~ sandy shell hash w/ clay (≈10%) Wet, low to no plasticity					
60	60								

60 ft BLS

Reviewed by: Mike Burch

soil boring TD ≈ 60 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW166
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-15-17
Date Completed: 2-15-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.45' BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 posthole 5-50 no sample collected					Well development 10 mm @ 1 gpm Clear to cloudy
50				fine SAND (SP), grey, wet					
52				SAA		NR			
54									
56				SAA w/ ~~clay~~ clayey SAND stringers approx 1" in thickness, intermittent to 57', low plasticity					
58				fine SAND (SP), grey, wet					Screened 47-59' BLS
60				clayey SAND to sandy CLAY (SP-SC), low plasticity SAA w/ Shell frags 40%					

Reviewed by: Mike Burton

Soil boring terminated at 60'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW / 67
Geologist/Eng.: Ben Copperger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-15-17
Date Completed: 2-15-17
Borehole Diameter: ~5,9"
Borehole Depth: ~60'
Depth to Water: 3,60' BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50 no sample collected					Well development 10 min @ 1 gpm clear to cloudy
50				fine SAND (SP), grey, wet					
52				SAA		100	SP		
54				SAA, w/ clayey SAND to sandy clay stringers approx. 1" thick to nodules; incohesive, low plasticity, intermittent stringers w/ fine SAND (SP) predominant			SP/SP-SC		
56									
58				fine SAND (SP), grey		100	SP		Screened 57-59' ~BLS
60				Clayey SAND (SP-SC), 100 Plast. SAA w/ shell frags 40%			SP-SC		

Soil boring terminated at 60'

Reviewed by: Mike Burt

Note! MM indicates clayey sand stringer/nodule

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW168
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-15-17
Date Completed: 2-15-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.70 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 posthole 5-50 no sample collected					well development 10 min @ 1gpm, Cloudy to clear
50				fine SAND (SP), grey, wet			SP		
52				SAA w/ clayey SAND stringer, low plasticity fine SAND (SP), grey			SP-SC SP		
54				SAA w/ clayey SAND stringer, low plasticity fine SAND (SP), grey		NR	SP-SC SP		
56									
58				Clayey sand ~~to Sandy CLAY~~ (SP-SC) low ~~to med~~ plasticity, grey predominantly Sand w/ clayey sand stringers + nodules fine SAND (SP), grey			SP-SC SP		screened ~57-59' BLS
				Clayey SAND (SP-SC) w/ Shell frags 40%, grey			SP-SC		
60									Soil boring terminated at 60'

Reviewed by: Mike Burch

COTIS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW01
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 3.30'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole 5-50': sonic drilling					
	50 to 55'	13:55		50-55': SAND, gray, fine grain, loose, saturated		50%	SP		no odor
	55 to 60'			55-58.5': same as above w/ trace clay. 58.5'-60': same as above w/ shells. boring terminated @ 60' bls w/ screen 57.5' bls. well development: 10 gal @ 1 gpm. → clear, no odor.			SP		

Reviewed by: Mike Burton

CCHS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW0170
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 3.70'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole. 5-50': sonic drilling, no sampling					
	50 to 55	1340		50-51': SAND, gray, fine grain loose, saturated w/ minor clay + shell. 51-55': SAND, gray, fine, loose, saturated.		90%	SP		no odor
	55 to 60'			55-57': same as above 57-59': same as above w/ minor clays. 59-60': same as w/ trace shells. boring terminated @ 60' bls w/ screen 57-59' bls. well development: 10 gal @ 1gpm. → clear, no odor.			SP.		

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 171
Geologist/Eng.: Ben Coppinger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates Same as above

Page 1 of 1
Date Started: 2-14-17
Date Completed: 2-14-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.10 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post hole d 5-50 no sample collected					well development 10 min @ 1 gpm Cloudy to Clear
50				fine SAND (SP), grey, wet		100	SP		
52				SAA					
54									
56				SAA		100			
58									screened ~57.59' BLS
				Clayey SAND (SP-SC), low plasticity, grey		30	SP-SC		
60				Soil boring terminated at 60'					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 172
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-15-17
Date Completed: 2-15-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 4.00' BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 postholed 5-50 no sample collected					well development 10 min @ 1 gpm cloudy to clear
50				fine SAND (SP), grey, wet			SP		
				SAA w/ ~1" clayey sand stringers, low plasticity, grey			SP/SP-SC		
52				fine SAND (SP), grey					
54				SAA		NR	SP		
56				SAA			SP		
58				Sandy CLAY to Clayey SAND (SP-SC), low to med. plasticity, grey			SP-SC		screened 57-59' BLS
60				~~fine SAND~~ SAA w/ shell frags 40% (SP-SC)			SP-SC		

Reviewed by: Mike Burke

Soil boring terminated at 60'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW ~~7~~ 173
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-15-17
Date Completed: 2-15-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: ~~4.00' BLS~~ 3.83' BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50 no sample collected					Well development 10 min @ 1gpm. cloudy 90 clear
50				fine SAND (SP), grey, wet		100	SP		
52									
54							SP		
56				SAA w/ trace clayey sand stringers			SP/SP-SC		
				fine SAND (SP), grey		100	SP		Screened ~57-59' BLS
58				Sandy CLAY (SP-SC), low to med. plasticity, grey			SP-SC		
60				~~Sandy~~ SAA w/ shell frags 40%					

Reviewed by: Mike Burch

Soil boring terminated at 60'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 174
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-15-17
Date Completed: 2-15-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 3.61 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50 no sample collected					well development 10 min. @ 1 gpm, clear to cloudy
50				fine SAND (SP), grey, wet		100	SP		
52				SA A					
54				SAA			SP		
56				SAA w/ clayey SAND stringers ~1" thick, intermittent every few inches		100	SP/SP-SC		
58				fine SAND (SP), grey			SP		screened 57-59' BLS
60				clayey SAND (SP-SC), low to med plasticity. SAA w/ shell frags 40%			SP-SC		

Reviewed by: Mike Burch

Soil boring terminated at 60'

COTTS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 0175
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 5.50'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole. 5-50': sonic drilling, no sampling.					
	50 to 55'	750		50-51.5': SAND, gray, fine grain, loose saturated 51.5-52': same as above w/ trace clay. 52-55': SAND, gray, fine, loose, saturated.		90%	SP		no odor ↓
	55 to 60'			55-56': same as above. 56-58.5': same as above w/ trace clay. 58.5'-60': same as above w/ trace clay + shells boring terminated @ 60' bls w/ screen ~57-54' bls. well development: 10 gal @ 1gpm → clear, no odor.			SP		

Reviewed by: Mike Burch

CONS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW01710
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 3.20'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole 5-50': sonic drilling, no sampling					
	50 to 55'	9:55		50-55': SAND, gray, fine grain, loose, saturated		80%	SP		no odor
	55 to 60'			55-57': same as above 57-58.5': same as above w/ trace clay. 58.5-60': same as above w/ trace clay + shells boring terminated @ 60' bls w/ screen @ 57-59' bls.					
				well development: 10 gal @ 1 gpm. → Clear, no odor.					

Reviewed by: Mike Burke

COTIS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW0177
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 3.10

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0 to 5': post hole 5 to 50': sonic drilling, no sampling					
	50 to 55'	1130		50 to 55': SAND, gray, fine grain, loose, saturated		90%	SP		no odor
	55 to 60'			55 to 57': no recovery, 57 to 59': SAND gray, fine grain, loose w/ minor clay 59 to 60': same as above w/ shells. boring terminated @ 60' BLS w/ screen ~57-59' BLS.		60%	SP		
				well development: 10 gal @ 1 gpm. → clear, no odor.					

Reviewed by: Mike Burch

CCIIS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-078
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 3.50'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole 5-50': sonic drilling, no sampling.					
	50 to 55'	9:55		50-55': SAND, gray, fine grain, loose, saturated.		90%	SP		no odor
	55 to 60'			55-58': same as above w/ trace clay 58-60': clayey SAND, gray, fine grain, loose, saturated w/ shells boring terminated @ 60' bgs w/ screen 57-55' bgs. well development: 10 gal @ 1 gpm → clear, no odor.			SP SC		

Reviewed by: Mike Burton

CCIS1

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 0179
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/7/17
Date Completed: 2/7/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 3.70'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole 5-50': sonic drilling, no sampling					
	50 to 55'	8:15		50-55': SAND, gray, fine grain, loose, saturated		80%	SP		no odor
	55 to 60'			55-56': same as above 56-58': same as above w/ trace clay 58-60': sandy CLAY, soft, gray, medium plasticity, wet w/ trace shells		90%	SP CL		
				boring terminated @ 60' bls w/ screen ~55 to 57' to avoid clay. well development: 10 gal @ 1 gpm. → clear, no odor.					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 180
Geologist/Eng.: Jake Crom
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 60.10 ft BLS

Page 1 of 1
Date Started: 2/17/17
Date Completed: 2/17/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 60 ft BLS
Depth to Water: 3.10 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS post hole cleared					well developed @ ≈ 1.0 gpm for ≈ 10 minutes water color gray to clear
50				5'-50' BLS no sample collected					
50 ft BLS 50	50	N/A	N/A	Grey/Blue grey fine grain SAND, wet, non plastic trace silts				N/A	
52 ft BLS						85%			
54 ft BLS				same			SP		
55	55	N/A	N/A						
56 ft BLS				same					
58 ft BLS				same		85%			Screened @ ~~59.1'~~ AJC 57.1'-59.1' BLS
60 ft BLS 60	60			same					

Reviewed by: Mike Brett

soil boring TD ≈ 60 ft BLS

CONST

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW01981
Geologist/Eng: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/9/17
Date Completed: 2/9/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 3.50'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole 5-50': Sonic drilling, no sampling.					
	50 to 55'	1650		50-55': SAND, gray, fine grain, loose, wet.		90%	SP		no odor
	55 to 60'			55-57': no recovery 57-60': same as above w/ approx 1" trace clay at 57.5' (AS 57)		100%	SP		↓
				boring terminated @ 60' bgs w/ screen ~57-53' bgs.					
				well development: 10 gal @ 1 gpm. → clear, no odor.					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 182
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-13-17
Date Completed: 2-13-17
Borehole Diameter: ~5.9
Borehole Depth: ~60 ft BLS
Depth to Water: 4.05 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' post holed					well development ~10 gal @ ~1 gpm cloudy grey to clear
				5-50' no sample collected					
50				SAND, fine, grey, wet no observed odor or staining	SP	100	SP		
52				SAA					
54									
56						100			
58				SAA with clayey sand, low plasticity, grey	SP-SC		SP-SC		screened ~57-54' BLS
60				SAND, fine (SP)	SP		SP		Soil boring terminated at 60'

Reviewed by: Mike Burt

CONS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW0083
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/9/17
Borehole Diameter: 10"
Borehole Depth: 60'
Depth to Water: 3.70'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole (concrete (presumably from prior fill encountered @ ~5') 5-50': sonic drilling, no sampling					
	50 to 55'	8:45		50-55': SAND, gray, fine grain, loose, wet.		90%	SP		no odor
	55 to 60'			55-58': Same as above, saturated 58-59.5': same as above w/ trace clay 59.5-60': same as above w/ trace shells boring terminated @ 60' bls w/ screen ~57-59' bls well development: 10 gal @ 1 gpm. → clear, no odor.		90%	SP		

Reviewed by: Mike Burns

CCIIS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW0184
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 3.80'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': past mole. 5-50': sonic drilling, no sampling					
	50' to 55'	16:35		50-55': SAND, gray, fine grain, loose, saturated		90%	SP		no odor
	55 to 60'			55-56': same as above 56-60': same as above w/ trace clay					
				boring terminated @ 60' bls w/ screen ~57'-59' bls. well development: 10 gal @ 1gpm. → clear, no odor.					

Reviewed by: Mike Burch

COTIS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW0185
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: 12"
Borehole Depth: 60'
Depth to Water: 3.80'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole 5-50': sonic drilling, no sampling					
	50 to 55'	14:50		50-55': SAND, gray, fine, loose, saturated w/ thin clayey seam @ 53'		90%	SP		no odor
	55 to 60'			55-56': no recovery 56-57': SAND, gray, fine, loose, saturated 57-60': same as above w/ trace clay. boring terminated @ 60' bls w/ screen ~57'-59' bls.		85%	SP		
				well development: 10 gal @ 1gpm *clear, no odor.					

Reviewed by: Mike Burch

CCIIS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW0186
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: 6"
Borehole Depth: 120'
Depth to Water: 3.95'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole. 5-50': sonic drilling, no sampling.					
	50 to 55'	13:20		50-53': SAND, gray, fine, loose, saturated. 53-53.5': same as above w/ trace clay. 53.5-55': same as 50-53' 55-55.5': no recovery		90%	SP		No recovery 50'-50.5' no odor ↓
	55 to 60'			55.5-58.5': SAND, gray, fine, loose saturated. 58.5-60': same as above w/ trace clay. boring terminated @ 60' bls. w/ screen ~ 57-59'		80%	SP		
				well development: 10 gal @ 1gpm. → clear, no odor.					

Reviewed by: Mike Burt

CONST

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 080
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/8/17
Date Completed: 2/8/17
Borehole Diameter: 10"
Borehole Depth: 60'
Depth to Water: 3.50'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole. 5-50': sonic drilling, no sampling.					
	50 to 55' (60' bgs)	11:00		50-55': sand, gray, fine grain, loose, saturated		0%	SP		no odor
	55' to 60'			55-57.5': Same as above. 57.5-59': Same as above w/ trace clay 59-60': Same as above w/ shells. boring terminated @ 60' bgs w/ screen 57-59' well development: 10 gal @ 1 gpm. → Clear, no odor.			SP		

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW / 8 8
Geologist/Eng.: Alex Warlinski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of
Date Started: 2/10/17
Date Completed: 2/10/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 5.77 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BLS post holed					well developed ~10 min @ ~1 gpm cloudy grey to clear
50				5-50' BLS not sampled					
				No Recovery (sleeve ripped and top 2' fell into borehole)	NR				
52				SAND, fine, grey, wet, loose, no observed staining or odor			SP		
						60			
54									
							SP		
56									~57'
				SAA, trace clay, slightly cohesive		100			
				SAA, no clay					SCREENED
58							SP		~59'
60				EOB Bottom of borehole					

Reviewed by: Mike Burke

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW | 89
Geologist/Eng.: Alex Warenski
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates "same as above"

Page 1 of 1
Date Started: 2/10/17
Date Completed: 2/10/17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 5.65 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5' BGS posthole					well developed ~10 min @ ~1 gpm cloudy grey to clear
50				SAND, fine, grey, wet, loose, no observed odor or staining, trace shell frags up to 1"					
				SAA, no shell			SP		
52						100			
54									
56				SAA interbedded w/ SAND w/ clay (no plasticity)		100	SP/SP-SC		~57'
				SAA, no interbedding/clay, ~5% shell up to ¼"			SP		SCREENED
58				SAA, trace clay, interbedded w/ limited amounts SAND w/ clay			SP/SP-SC		
				SAA, no interbedding/clay, ~5% shell			SP		~59'
				SAA, trace clay					
60				SAA, no clay					
				SAA, w/ clay			SP-SC		
				60' BGS bottom of borehole					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 190
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-15-17
Date Completed: 2-16-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 4.75' BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50 no sample collected					Well development 10 min @ 1gpm Clear to Cloudy
50				fine SAND (SP), grey, wet			SP		
52				SAA		NR			
54							SP		
56				SAA					
58							SP		Screened 57.5' BLS
				clayey SAND (SP-SC), low to med plasticity;			SP-SC		
60				SAA, transition to fine SAND w/ some clay, low plasticity			SP/SP-SC		

Reviewed by: Mike Burch

Soil boring terminated at 60'

COTTS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 0191
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/6/17
Date Completed: 2/6/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 4.20'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0 to 5': post hole 5 to 50': sonic drilling, no sampling.					
50				50-52.5': no recovery.					
	50 to 55'	10:20		52.5 - 55': SAND, gray, fine. loose saturated.		50%	SP		no odor
55				55 - 58': Same as above.					
	55 to 60'			58 - 60': Same as above w/ trace clay.		90%	SP		
60				boring terminated @ 60' bls, w/ screen 57-58' bls. well development: 10 gal @ 1gpm → Clear, no odor.					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 192
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-16-17
Date Completed: 2-16-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 4.55' BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post hold 5-50 no sample collected					well development 10 min. @ 1gpm cloudy to clear
50				fine SAND (SP), grey, wet					
52				SAA		NR	SP		
54									
56				SAA			SP		
58				~~clayey SAND~~ BC sandy CLAY, low plasticity			SP-SC		screened ~57.5' BLS
				fine SAND (SP), grey			SP		
60				sandy CLAY, low plasticity			SP-SC		

Reviewed by: Mike Burt

Soil boring terminated at 60'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 193
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-16-17
Date Completed: 2-16-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 4.95 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50 no sample collected					Well development 10 min @ 1gpm
50				fine SAND (SP), grey, wet			SP		
52				SAA					
				SAA, w/ trace clayey SAND, low plasticity			SP-SC		
54				fine SAND (SP), grey		NR	SP		
56				SAA					
58				SAA w/ trace clayey SAND, low plast. fine SAND (SP) SAA w/ trace clayey SAND, low plasticity			SP-SC SP SP-SC		4" screen 57-59' #25
60				fine SAND (SP)			SP		

Reviewed by: Mike Burton

Soil boring terminated at 60'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 194
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates Same as Above

Page 1 of 1
Date Started: 2-16-17
Date Completed: 2-16-17
Borehole Diameter: ~5.9"
Borehole Depth: ~60'
Depth to Water: 4.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-50 no sample collected					well development 10 min @ 1gpm Cloudy to clear
50				fine SAND (SP), grey, wet			SP		
52						NR			
				SA A					
54							SP		
				SAA					
56									
				clayey SAND (SP-SC) low plasticity, grey			SP-SC		screened ~57-59' BLS
58				fine SAND (SP), grey			SP		
				clayey SAND to sandy CLAY, low plasticity			SP-SC		
60				Soil boring terminated at 60'					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 195
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/3/17
Date Completed: 2/3/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND, no odor		NR	SP		Screened ~56'-58'
	55 to 60			55'-58.3' Gray fine SAND w/ interlaminated clay 58.3'-59.3' Gray fat CLAY 59.3'-60' Gray fat CLAY w/ shell fragments (<25%)			SP CH CH		
				Terminated @ 60', completed as ASW-195					well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

CCIIS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 01916
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/16/17
Date Completed: 2/16/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 4.00'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5': post hole 5-50': sonic drilling, no sampling					
	50 to 55'	1325		50-55': SAND, fine grain, gray, loose, saturated		90%	SP		no odor
	55 to 60'			55-58': SAND, fine grain, gray, loose, saturated 58-60': same as above w/ trace clay, shells observed @ 60' boring terminated @ 60' bls, screen ~57-59' bls well development: 10 gal @ 1 gpm. → clear, no odor.			SP		

Reviewed by: Mike Burch

CORRS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 0197
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/16/17
Date Completed: 2/16/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 4.40' btoc - 0.5' = 3.9' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5' : post hole 5-50' : sonic drilling, no sampling					
	50' to 55'	14:55		50-54' : SAND, gray, fine grain, loose saturated.			SP		
				54-54.5' : Sandy Clay, gray, no plasticity, saturated.			CL		no odor
				54.5-55' : Same as 50-54'		90%	SP		
	55 to 60'			55-56' : SAND, gray, fine loose, saturated.			SP		" "
				57-60' : same as above w/ trace clay					
				boring terminated @ 60' bls w/ screen ~57-53' bls.					
				well development : 10 gal @ 1gpm, clear, no odor.					

Reviewed by: Mike Burch

COTTS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 0198
Geologist/Eng: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/6/17
Date Completed: 2/6/17
Borehole Diameter: 6"
Borehole Depth: 60'
Depth to Water: 4.10'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50'			0-5' post hole 5'-50' sonic drilling, no sampling					
	50 to 55'	10:40		SAND, gray, fine grain, loose saturated		~90%	SP		no odor
	55 to 60'	10:45		55-59': SAND, gray, fine grain, loose, saturated. 59-60' same as above w/ minor clay boring terminated @ 60' ft bls w/ screen ~57-59' development: 10 min @ 1 gpm, clear no odor.		~30%	SP		

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 199
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/3/17
Date Completed: 2/3/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50'					
	50 to 55			50'-52' Gray fine SAND 52'-52.5' Gray fine SAND w/ trace clay 52.5'-55' Gray fine SAND		NR	SP SP SP		Screened 57'-59'
	55 to 60			55'-59.2' Gray fine SAND w/ interlaminated clay 59.2'-59.6' Gray fat CLAY 59.6'-60' Gray fat CLAY w/ shell fragments and sand			SP CH CH		
				Terminated @ 60', completed as ASW 199					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 200
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/3/17
Date Completed: 2/3/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-50.3' Gray fine SAND w/ shell fragments			SP		Screened 57'-59'
				50.3'-55' Gray fine SAND, no odor		NR	SP		
	55 to 60			55'-60' Gray fine SAND w/ trace clay			SP		
				Terminated @ 60', completed as ASW-200					Well development: Remove 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 201
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/3/17
Date Completed: 2/3/17
Borehole Diameter: 5.9"
Borehole Depth: 60'
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 50			0'-5' Post hole 5'-50' Drilled w/ no sampling					
	50 to 55			50'-55' Gray fine SAND, no odor		NR	SP		Screened ~ 57'-59'
	55 to 60			55'-58.5' Gray fine SAND, no odor 58.5'-60' Gray fine SAND w/ trace clay, no odor			SP SP		
				Terminated @ 60', completed as ASW-201					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 202
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: 5.9"
Borehole Depth: 53'
Depth to Water: 3.6'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' Post hole					
				5'-43' Drilled w/ no sampling					
	43 to 48			43'-43.5' Gray fine SAND w/ shell fragments & trace silt			SP		Screened 50.6'-52.6'
				43.5'-46' Gray fine SAND w/ trace silt		NR	SP		
	48 to 53			46'-48' Gray fine SAND			SP		
				48'-50' Gray fine SAND			SP		
				50'-51' Gray fine SAND w/ interlaminated clay			SP		
				51'-52' Gray fine SAND w/ shell			SP		
				52'-53' Clayey SAND			SC		
				Terminated @ 53', completed as ASW-202					well development: Removed 10 gal @ 1gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 203
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: 5.2"
Borehole Depth: 53
Depth to Water: 4.3'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 43			0'-5' post hole 5'-43' Drilled w/ no sampling					
	43 to 48			43'-43.5' Gray fine SAND w/ shell fragments (25%) & trace silt			SP		
				43.5'-48' Gray fine SAND w/ trace shell fragments (decreasing shell @ greater depth)		NR	SP		
	48 to 53			48'-51' Gray fine SAND			SP		Screened: 50.4 to 52.4 ft BLS
				51'-52.7' Gray fine SAND w/ increasing shell fragments			SP		
				52.7'-53' Gray fine SAND w/ trace clay			SP		
				Terminated @ 53', completed as ASW-203					Well development: 13 gal @ 1gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 204
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: 5.9"
Borehole Depth: 53'
Depth to Water: 3.5'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 43			0'-5' Post hole 5'-43' Drilled w/ no sampling					
	43 to 48			43'-46' Gray fine SAND w/ trace shell fragments 46'-48' Gray fine SAND, no odor		NR	SP SP		Screened ~50'-52'
	48 to 53			48'-50' Gray fine SAND, no odor 50'-50.3' Gray fine SAND w/ trace silt, no odor 50.3'-53' Gray fine SAND, no odor			SP SP SP		
				Terminated @ 60', completed as ASW-204					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 205
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: 5.9"
Borehole Depth: 53'
Depth to Water: 3.3'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 43			0'-5' Post hole 5'-43' Drilled w/ no sampling					
	43 to 48			43'-46' Gray fine SAND w/ trace shell fragments			SP		
				46'-48' Gray fine SAND, no odor		NR	SP		Screened 49.3'-51.3'
	48 to 53			48'-53' Gray fine SAND, no odor			SP		
				Terminated @ 53', completed as ASW-205					well development: Removed 10 gal @ 1gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 206
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: 5.9"
Borehole Depth: 53'
Depth to Water: 2.5'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 43			0'-5' Post hole 5'-43' Drilled w/ no sampling					
	43 to 48			43'-44' Gray fine SAND w/ shell hash (>75%)			SP		Screened 50.7'-52.7'
				44-48' Gray fine SAND, no odor		NR	SP		
	48 to 53			48'-53' Gray fine SAND, no odor			SP		
				Terminated @ 53', completed as ASW-206					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burke

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 207
Geologist/Eng.: Ron Kent
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/2/17
Date Completed: 2/2/17
Borehole Diameter: 5.9"
Borehole Depth: 53
Depth to Water: 4.9'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 43			0'-5' post hole 5'-43' Drilled w/ no sampling					
	43 to 48			43'-43.5' SHELL hash w/ sand 43.5'-48' Gray fine SAND w/ shell fragments decreasing w/ depth & trace silt		NR	SHELL SP		Screened ~50'-52'
	48 to 53			48'-52' Gray fine SAND 52'-52.5' Gray fine SAND w/ trace clay 52.5'-53' Gray fine SAND w/ shell fragments (<25%)			SP SP SP		
				Terminated @ 53', completed as ASW-207					Well development: Removed 10 gal @ 1 gpm

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-208
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured at 52.61 ft BLS

Page 1 of 1
Date Started: 2/15/17
Date Completed: 2/15/17
Borehole Diameter: ≈5.9"
Borehole Depth: ≈~~60~~ 53 ft BLS
Depth to Water: 4.79 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS postnole cleared					Well developed @ ≈ 1.0gpm for ≈ 10 minutes watercolor gray to clear
43				5'-43' BLS no sample collected					
43 ft BLS	43	N/A	N/A	Blue grey sandy shell hash, wet non plastic, some large shell framents					
45 ft BLS				Same		95%			
47 ft BLS	48	N/A	N/A	Blue grey fine grain silty SAND w/ trace shell fragments, wet non plastic			SM		
48	48	N/A	N/A	Same					
49 ft BLS				Blue grey fine grain silty SAND w/ trace shell fragments, trace clay material, wet, low to no plasticity		80%			Screened 49.6'-51.6' BLS
51 ft BLS							SM		
53	53								
53ft BLS									

Reviewed by: Mike Burt

soil boring TD = 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 209
Geologist/Eng.: Jake Crom
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured x 52.90 ft BLS

Page 1 of 1
Date Started: 2/15/17
Date Completed: 2/15/17
Borehole Diameter: ≈5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 4.55 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS post hole cleared					Well developed @ ≈ 1.0 gpm for ≈ 10 minutes, water grey to clear in color
43				5'-43' BLS no sample collected					
43 ft BLS	43	N/A	N/A	Blue grey sandy shell Hash, wet, non plastic, some large shell fragments				N/A	
				Same					
45 ft BLS						85%			
				Same as 43'-45.5' but decreased shell content (≈30%), ~~silts~~ Adc silty, fine grain SAND (≈70%)			SM		
47 ft BLS									
48	48								
48	48	N/A	N/A	Blue grey fine grain silty SAND wet, non plastic, trace shells			SM		
49 ft BLS									
				Blue grey fine grain silty SAND trace shell content, trace clays wet, low to no plasticity		65%	SM		Screened 49.9'-51.9' BLS
				Same					
51 ft BLS									
				Same as 48'-49' BLS			SM		
				Same					
53 53 ft BLS	53								

Reviewed by: Mike Burt

soil boring TD = 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-210
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 52.05 ft BLS

Page 1 of 1
Date Started: 2/15/17
Date Completed: 2/15/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ ~~to~~ 53' BLS (MC)
Depth to Water: 5.37 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS Post hole cleared					Well developed @ ≈ 1.0 gpm for ≈ 15 min water color gray to clear
43 ft BLS	43			5'-43' BLS no sample collected					
43	43	N/A	N/A	Blue grey sandy shell hash, wet, non plastic				N/A	
45 ft BLS				same		65%			
47 ft BLS				Blue grey fine grain silty SAND w/ trace shells, wet, non plastic			SM		
48	48	N/A	N/A	same					
49 ft BLS				Blue grey fine grain silty SAND w/ trace shells & trace clay wet, low to no plasticity		60%	SM		Screened 49.6'-51.6' BLS
51 ft BLS				same as 45.5'-49' BLS			SM		
53 ft BLS	53			same					

Reviewed by: Mike Burt

Soil boring TD ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 211
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/14/17
Date Completed: 2/14/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ to 53 ft BLS
Depth to Water: 3.85 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS post hole cleared					well developed ≈ 1.0 gpm for ≈ 10 minutes, water color gray to clear
43 ft BLS				5'-43' BLS no sample collected					
43	43	N/A	N/A	Blue grey sandy shell flash, wet non plastic				N/A	
45 ft BLS				Blue grey fine grain silty SAND w/ trace shells, wet, non plastic		60%	SM		
				Same					
47 ft BLS				Blue grey fine grain silty SAND w/ trace shells & trace clays, wet, low to no plasticity					
48	48	N/A	N/A						
49 ft BLS				Same			SM		
				Same as 43.5'-47' BLS		60%			Screened @ 49.8'-51.8' BLS
51 ft BLS				Same			SM		
53 ft BLS	53	53							

Reviewed by: Mike Burch

Soil boring TD ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 317
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/14/17
Date Completed: 2/14/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 3.61 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS Post hole cleared 5'-43' BLS no sample collected					Well Developed @ ≈1.0 gpm for ≈ 15 minutes water gray to clear in color
43 ft BLS	48	43	N/A	N/A	Blue grey sandy Shell Hash, wet, trace clay, low to no Plasticity				N/A
45 ft BLS					Blue grey fine grain silty SAND w/ trace shells, wet non plastic		90%	SM	
47 ft BLS	48	48	N/A	N/A	Same but ≈ 10% shells				
49 ft BLS	48	48	N/A	N/A	Blue grey fine grain silty SAND w/ trace shells, trace Clay, wet, low to no Plasticity		60%	SM	Screened @ 50'-52' BLS
51 ft BLS					Same				
53 ft BLS	53	53							

Reviewed by: Mike Burton

Soil boring TD ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 213
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-17-17
Date Completed: 2-17-17
Borehole Diameter: ~5.9"
Borehole Depth: ~53 ft BLS
Depth to Water: 5.05 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 postholed 5-43 no sample collected					well development 10 min @ 1 gpm cloudy to clear
43				fine SAND (SP), grey wet		100	SP		
45				SAA					
47							SP		
49				SAA		100	SP		
51							SP ← SP/SP5C		screened 50-52' BLS
53				SAA w/ trace clayey SAND, low plasticity fine SAND (SP), grey			SP		

Reviewed by: Mike Burt

Soil boring terminated at 53'

COTS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 0214
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/10/17
Date Completed: 2/10/17
Borehole Diameter: 6"
Borehole Depth: ~~60~~ 43 53'
Depth to Water: 5.95'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 43'			0 to 5': post hole. 5 to 43': Sonic drilling, no sampling.					
	43 to 48'	9:11		43 to 44': no recovery 44 to 46.5': SAND, grey, fine, loose, saturated w/ shells. 46.5 to 48': same as above, no shells.		SW/SP			no odor
	48 to 53'			48 to 49': no recovery 49 to 53': SAND, grey, fine, loose, saturated			SP		
				boring terminated @ 53' bls w/ screen 50-52' bls. well development: 10 gal @ 1gpm. → Clear, no odor.					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 215
Geologist/Eng.: Sallie Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 52.79 ft BLS

Page 1 of 1
Date Started: 2/15/17
Date Completed: 2/15/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 6.54 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' BLS post hole cleared					well developed @ ≈ 1.0 gpm for ≈ 15 min water color: grey to clear
				5'-43' BLS no sample collected					
43	43	N/A	N/A	Blue grey sandy shell hash non plastic, wet				N/A	
48	48			Same		85%			
48	48	N/A	N/A	Same					
				Blue grey fine grain silty SAND non plastic, wet, trace shell fragments			SM		
				Blue grey fine grain silty SAND w/ trace shells & trace Clay, wet, low to no plasticity		95%	SM		Screened 49.8'-51.8' BLS
53	53			same					

Reviewed by: Mike Burke

Soil boring TD ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 216
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 52.84 ft BLS

Page 1 of 1
Date Started: 2/15/17
Date Completed: 2/15/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 5.76 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0									well developed @ ≈ 1.0 gpm for ≈ 10 minutes water grey to clear in color
43									
43 ft BLS	43	N/A	N/A	Blue grey sandy shell hash wet, non plastic, some large shell fragments				N/A	
				same		60%			
45 ft BLS				same					
47 ft BLS	47	N/A	N/A	Blue grey fine grain silty (ASW) Sand SAND w/ trace shells w trace clay, wet, low to no plasticity					
49 ft BLS	48					80%	SM		Screened @ 49.8' - 51.8' BLS
				same					
53 ft BLS	53			same					

Reviewed by: Mike Burt

soil boring TD ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 217
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/14/16
Date Completed: 2/14/16
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 4.70 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' BLS Post hole cleared					well developed @ ≈ 1.0 gpm for ≈ 15 minutes water gray to clear in color
				5'-43' ~~BLS~~ BLS no sample collected (ASC)					
43ft BLS	43	N/A	N/A	Blue grey Sandy Shell Hash non plastic, wet				N/A	
45ft BLS				Blue grey fine grain silty SAND, wet, non plastic, trace shells		80%			
47 ft BLS	43 48			Same			SM		
	48	N/A	N/A	same					
49ft BLS				same					
				Blue grey fine grain silty SAND w/ trace shells + trace clays wet, low to no plasticity		80%	SM		Screened @ 49.9'-51.9' BLS
51 Ft BLS				Same as 45'-49.5' BLS					
							SM		
53ft BLS	53			Same					

Reviewed by: Mike Burk

Soil boring TD ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 218
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/14/17
Date Completed: 2/14/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 4.23 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS post hole cleared					Well developed ≈ 1.0 gpm for ≈ 10 minutes, water color gray to clear
43				5'-43' BLS no sample collected					
43 ft BLS 43	43	N/A	N/A	Blue grey sandy shell hash non plastic, wet, some large shell fragments				N/A	
45 ft BLS				Blue grey fine grain silty SAND non plastic, wet, trace shells		90%	SM		
47 ft BLS				Same					
48	48								
48	48	N/A	N/A	Blue grey fine grain silty SAND w/ trace shells + trace clays low to no plasticity, wet			SM		
49 ft BLS				Same as 45'-48' BLS		80%			
51 ft BLS				Same			SM		Screened @ 50'-53' BLS
53	53			Same					
53 ft BLS									

Reviewed by: Mike Burch

SOIL boring TD = ≈ 53 ft BLS

COTTS

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 0219
Geologist/Eng.: A. Johnson
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/10/17
Date Completed: 2/10/17
Borehole Diameter: 6"
Borehole Depth: ~~100'~~ 53'
Depth to Water: 6.70'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 43'			0-5': post hole 5-43': sonic drilling, no sampling					
	43 to 48'	10:30		43-44.5': no recovery. 44.5-48': SAND, fine, gray, loose, saturated w/ shells.		75%	SP		no odor
	48 to 53'			48-49': no recovery 49-49.5': same as 44.5-48' 49.5-53': SAND, gray, fine, loose, saturated					
				boring terminated @ 53' bls w/ screen ~50-52' bls. well development: 10 gal @ 1 gpm. → clear, no odor.					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 220
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured @ 53'4" BLS / 53.33 ft BLS

Page 1 of 1
Date Started: 2/13/17
Date Completed: 2/13/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 6.44 ft TOC

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0	0			0'-5' Post Hole Cleared					
AJC				5'-43/50 No sample collected (AJC)					
43ft 43 50ft BLS 50	50								Well Development ≈ 1.0 gpm for ≈ 10 minutes. gray to clear
43	43			Blue grey Sandy Shell hash non plastic, wet					
45ft BLS				Same		80%			
47 ft BLS 48	48			Same					
48	48								
49 ft BLS				Blue grey silty fine grain SAND, wet, non plastic trace shells					
51ft BLS				Same		95%			
						9 (AJC)			Screened @ 50'4" - 52'4" BLS 50.33'-52.33' BLS
53 53	53			Same		5%			
53 ft BLS				soil boring TD = ≈53 ft BLS					

Reviewed by: Mike Burns

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 221
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 52.80 ft BLS

Page 1 of 1
Date Started: 2/15/17
Date Completed: 2/15/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 6.50 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0'-5' post hole cleared 5'-43' no sample collected					well developed @ ≈ 1.0 gpm for ≈ 10 minutes, water color gray to clear
43 ft BLS	43	N/A	N/A	Blue grey sandy shell hash wet, non plastic				N/A	
45 ft BLS	43	N/A	N/A	same		55%			
47 ft BLS	48	N/A	N/A	same					
48	48	N/A	N/A	Blue grey fine grain silty SAND w/ trace shell fragments wet, non plastic					
49 ft BLS	48	N/A	N/A			95%	SM		Screened @ 49.8'-51.8' BLS
51 ft BLS	53	N/A	N/A	same					
53 ft BLS	53	N/A	N/A	Blue grey fine grain silty SAND w/ trace shells & trace Clay materials, wet, low to no plasticity			SM		

Reviewed by: Mike Burt

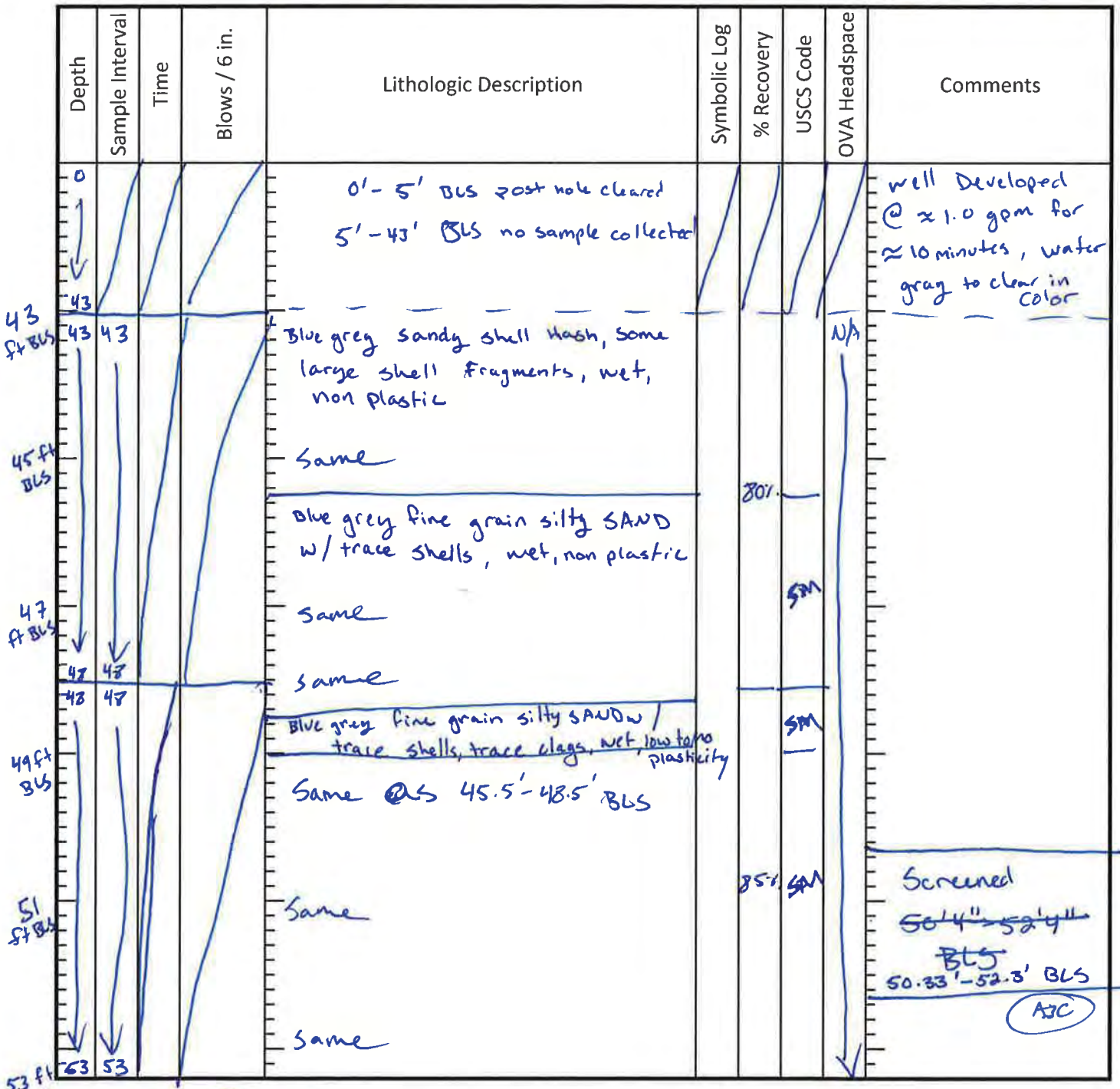
Soil boring TD ≈ 53 ft BLS

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BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 222
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total Well Depth measured ≈ 53'4" BLS / ~~53.33~~ ft BLS

Page 1 of 1
Date Started: 2/14/17
Date Completed: 2/14/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 5.47 ft TOC



Reviewed by: Mike Burns

Soil boring TD = ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 223
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: —

Page 1 of 1
Date Started: 2/14/17
Date Completed: 2/14/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: ~~5~~ 5.25 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS Post hole Cleared					Well Developed @ ≈ 1.0 gpm for ≈ 15 minutes water gray to clear in color
43 ft BLS	43	N/A	N/A	5'-43' BLS no sample collected				N/A	
	43	N/A	N/A	Blue grey Sandy Shell Hash wet, non plastic					
45 ft BLS				same					
				Blue grey fine grain Silty SAND w/ trace shells, wet, non plastic		80%			
47 ft BLS	47	N/A	N/A				SM		
	48	N/A	N/A	same					
49 ft BLS				Blue grey fine grain silty SAND w/ trace shells & trace clays wet, low to no plasticity			SM		
				same as 46'-49' BLS		80%	SM		Screened @ 50'-52' BLS
51 ft BLS				same					
53 ft BLS	53	N/A	N/A						

Reviewed by: Mike Burke

soil boring TD = ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 224
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-17-17
Date Completed: 2-17-17
Borehole Diameter: ~5.9"
Borehole Depth: ~53'
Depth to Water: 7.35 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-43 no sample collected					well development 10 min @ 1 gpm cloudy to clear
43				fine SAND (SP) w/ shell frags 50% w/ some large (2 in.) shells, grey, wet		100	SP		
45				SAA, no shell frags					
47				SAA			SP		
49				SAA		100	SP		screened ~50-52' BLS
51									
53				SAA w/ trace clayey SAND (SC) SP-SC, low plasticity, grey			SP/SC		

Reviewed by: Mike Burt

Soil boring terminated at 53'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 225
Geologist/Eng.: Jake Lowe
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/13/17
Date Completed: 2/13/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 7.25 ft TOC

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0	0			0-5' ft BLS post hole cleared				N/A	well developed ≈ 1.0 gpm for ≈ 10 minutes gray to clear in color
43 ft BLS	43			5'-43' BLS No sample collected					
	43			Blue grey ~~stuff~~ sandy shell hash, non plastic, wet					
45				Same		60%			
47				Same					
	48			Same					
	48			Blue grey fine grain silty SAND, wet non plastic trace shells		(NR)			
49							SM		
51				Same		70%			Screened 50'-52' ft BLS
	53			Same					
53									

Reviewed by: Mike Burke

soil boring TD = ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-226
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/13/17
Date Completed: 2/13/17
Borehole Diameter: ≈5.9"
Borehole Depth: ≈53 ft BLS
Depth to Water: 6.38 ft TOC

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS post hole cleared				N/A	Well development ≈1 gpm for ≈10 minutes gray to clear in color
43 ft BLS	43	43	43	5'-43' BLS no samples collected					
				Blue grey Sandy Shell Wash non plastic, wet					
45ft BLS				Same		70%			
47ft BLS				Same					
	48	48	48	~~Same~~ Blue grey ~~Sandy~~ fine grain silty SAND w shell fragments (≈30%) non plastic, wet			SM		
49ft BLS				Blue grey fine grain silty SAND non plastic, wet, trace shell		85%	SM		Screened 50'-52' BLS
51ft BLS				Blue grey fine grain silty SAND w/ trace clay, low to no plasticity, wet, trace shell			SM		
				Same as 49ft-50.5 ft BLS			SM		
53 ft BLS	53	53							

Reviewed by: Mike Burke

Soil boring TD = ≈53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 227
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: Total well depth measured ≈ 52.82 ft BLS

Page 1 of 1
Date Started: 2/16/17
Date Completed: 2/16/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53 ft BLS
Depth to Water: 6.97 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' BLS post hole cleared					Well developed ≈ 1.0 gpm for ≈ 10 minutes, water gray to clear in color
43 ft BLS	43			5'-43' BLS no sample collected					
43	43	N/A	N/A	Gray brown fine grain silty SAND, non plastic, wet, trace shell fragments			SM	N/A	
44.5				Dark Brown organic rich layer, root matter organic, ≈ 50%, wet, medium density, non plastic		40%	PT		
46 ft BLS								HNu	
47 ft BLS				Blue grey sandy shell hash, non plastic, wet, some large shell fragments					
48	48	N/A	N/A	Same					
48	48	N/A	N/A						
49 ft BLS				Blue grey fine grain silty SAND non plastic, wet, trace shell fragments		90%			Screened @ 49.8' - 51.8' BLS
51 ft BLS							SM		
53	53			Same					
53 ft BLS									

Reviewed by: Mike Burt

Soil boring TD = ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 228
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-17-17
Date Completed: 2-17-17
Borehole Diameter: ~5.9"
Borehole Depth: ~53'
Depth to Water: 7.55 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-43 no sample collected					Well development 10 min @ 1 gpm Cloudy to clear
43				fine SAND w/ shell frags 5% (SP), grey			SP		
45				fine SAND (SP), grey, wet no shell frags			SP		
47				SAA		NR			
49				SAA					
51				Clayey SAND (SP/SP-SC), low plasticity, trace fine SAND (SP), grey			SP/SP-SC SP		Screened 50-52' BLS
53				Soil boring terminated at 53'					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 229
Geologist/Eng.: Jake Crum
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 2/13/17
Date Completed: 2/13/17
Borehole Diameter: ≈ 5.9"
Borehole Depth: ≈ 53'
Depth to Water: 7.47 ft TOC

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0				0'-5' ft BLS post hole Cleared					well Developed @ ≈1.0 gpm for ≈10 minutes, grey to Clear in color
43	43			5'-43' no sample collected					
	43	43		Blue grey fine grain silty SAND w/ Shell hash material, non plastic, wet			SM	N/A	
45				Blue grey sandy shell hash non plastic, wet		60%			
47				Same					
	48	48		Same					
48	48			Same					
49									
				Blue grey fine grain silty SAND, non plastic, wet trace shells		60%	SM		Screened 50'-52' BLS
51									
53	53	53							

Reviewed by: Mike Burch

soil boring TD = ≈ 53 ft BLS

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 230
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-16-17
Date Completed: 2-16-17
Borehole Diameter: ~5.9"
Borehole Depth: ~53'
Depth to Water: 5.25' BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-43' no sample collected					Well development 10 min @ 1gpm Cloudy to Clear
43				fine SAND (SP), grey, wet			SP		
45				SAA					
47				SAA	NR		SP		
49				Clayey SAND (SP-SC), low plasticity, grey			SP-SC		
51				fine SAND (SP), grey, moist to wet			SP		Screened ~50-53' BLS
53				SAA Soil boring terminated at 53'			SP		

Reviewed by: Mike Burns

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 231
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-16-17
Date Completed: 2-16-17
Borehole Diameter: ~5.9"
Borehole Depth: ~53'
Depth to Water: 5.70 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-43 no sample collected					Well development 10 min @ 1gpm
43				fine SAND (SP), grey, wet		100	SP		
45									
47				SAA			SP		
49				SAA					
51				clayey SAND (SP-SC) low plasticity, grey		100	SP-SC		Screened ~50-52' BLS
53				fine SAND (SP), grey, moist to wet			SP		

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 232
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-16-17
Date Completed: 2-16-17
Borehole Diameter: ~5.9"
Borehole Depth: ~53'
Depth to Water: 7.10 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
									well development 10 min @ 1 gpm cloudy to clear
43				fine SAND (SP) w/ shell frags 5%		100	SP		
				fine SAND (SP), grey, wet					
47				SAA			SP		
49				SAA			SP		
51				clayey SAND (SP-SC), low plasticity		100	SP-SC		screened ~50-52' BLS
				fine SAND (SP), grey			SP		
53				soil boring terminated at 53'					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW233
Geologist/Eng.: Ben Coppenger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments: SAA indicates same as above

Page 1 of 1
Date Started: 2-17-17
Date Completed: 2-17-17
Borehole Diameter: ~5.9"
Borehole Depth: ~53'
Depth to Water: 4.0 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-5 post holed 5-43 no sample collected					well development 10 min @ 1gpm cloudy to clear
43				fine SAND (SP), grey, wet			SP		
45				SAA		100			
47				SAA					
49							SP		
51				SAA w/ trace clayey SAND stringer/nodule, low plasticity, incohesive		100	SP-SC		screened 50-52' BLS
				fine SAND (SP), grey			SP		
53									

Reviewed by: Mike Burch

Soil boring terminated at 53'

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 234
Geologist/Eng.: D. Silemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/18/17
Borehole Diameter: 5.9"
Borehole Depth: 23'
Depth to Water: 1.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 18'	-	NA	0'-5' Post hole 5'-18' Drilled w/ NO sampling					
	18 TO 23'			18'-23' Brown fine SAND, wet, NO odor		80	SP		Screened: 19.9 to 21.9 ft BLS
				Well Development: removed ~ 10 gallons @ ~ 1gpm, cloudy, NO odor 23 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 235
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/18/17
Borehole Diameter: ~5.9"
Borehole Depth: ~23 ft BLS
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 18			0'-5' Post hole 5'-18' Drilled w/ no Samplers					
	18 to 23			18'-23' Brown fine SAND. wet, NO odor		NR	SP		Screened: 20 to 22 ft BLS
				well development Removed ~10 gallons @ ~ 1gpm, cloudy, NO odor. 23 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 236
Geologist/Eng.: D. Silvernail
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/18/17
Borehole Diameter: 5.9"
Borehole Depth: 23'
Depth to Water: 2.00 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 18'	-	NA	0'-5' Post hole 5'-18' Drilled w/ no Sampling					
	18' TO 23'			18'-23' Brown fine SAND, wet, no odor			SP	85	Screened: 20.2 to 22.2 ft BLS
				well development: Removed ~10 gallons @ ~ 1gpm, cloudy, no odor 23 ft BLS - End of Boring					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 237
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/18/17
Borehole Diameter: 5.9"
Borehole Depth: 23'
Depth to Water: 2.10'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0 TO 18		-	NA	0'-5' Post hole 5'-18' Drilled w/ NO Sampling					
18				18-23' Brown fine SAND, wet, NO odor		90	SP		Screened: 20 to 22 ft BLS
10				well development: Removed ~10 gallons of ~~NO~~ H2O @ ~ 1gpm, cloudy, NO odor					
23				23 ft BLS - End of Boring					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW ~~24~~ 23B
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/9/17
Date Completed: 11/9/17
Borehole Diameter: 5.9'
Borehole Depth: 23'
Depth to Water: 2.10'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 18'		NA	0'-5' Post hole 5'-18' Drilled w/ no Sampling					
	18 TO 23			18'-23' Brown fine SAND, wet, no odor.		90	SP		Screened: 20 to 22 ft BLS
				well Development: Removed ~~0~~ ~10 gallons @ ~1gpm, clear, no odor 23 ft BLS - End of Boring					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 239
Geologist/Eng.: D. Siemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/18/17
Borehole Diameter: 5.9"
Borehole Depth: ~~88~~ 0ms 23'
Depth to Water: 1.79'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 18	—	NA	0'-5' Post hole 5'-18' Drilled w/ NO sampling					
	18 to 23			18-23' Brown fine SAND, wet, NO odor		85	SP		Screened: 20.2 to 22.2 ft BLS
				Well Development: Removed ~10 gallons @ ~1gpm, cloudy, NO odor 23 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 240
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/18/17
Date Completed: 1/18/17
Borehole Diameter: 5.9"
Borehole Depth: 23'
Depth to Water: 2.30'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 18	—	NA	0'-5' Port hole 5'-18' drilled w/ NO Sampling					
	18 to 23			18'-23' Brown fine SAND, wet, NO odor		90	SP		Screened 20 to 22 ft BLS
				Well Development: Removed ~ 10 gallons @ ~ 1 gpm, cloudy, NO odor 23 ft BLS - End of Boring					

Reviewed by: Mike Burke

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -241
Geologist/Eng.: D. Silemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/9/17
Date Completed: 1/9/17
Borehole Diameter: 5.9
Borehole Depth: 23'
Depth to Water: 3.00 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 18	-	NA	0'-5' Post hole 5'-18' Drilled w/ no sampling					
	18' to 23'	-	NA	18'-23' brown fine SAND, wet, no odor Term @ 23'			SP	75	Screened: 20 to 22 ft BLS
				Well Development: Removed ~27 Gallons @ ~ 1gpm, Brown, no solids, no odor.					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-242
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/10/2017
Date Completed: 1/10/2017
Borehole Diameter: 5.9"
Borehole Depth: 23'
Depth to Water: 4.81'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 18	-	NA	0-18' - Hand auger and blind drilled. No lithologic description available		80	SP	NA	
	18 to 23	10:10	NA	18-23' - Dark brown f to vf. Sand, little Silt, loose, wet, no odor Rec: 4.0'					Screened: 20.3 to 22.3 ft BLS
				Well Development Initial Color: Gray Final Color: Gray Total Vol. purged ~ 10 gals 23 ft BLS - End of Boring					

Reviewed by: Mike Brantley

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-243
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/10/2017
Date Completed: 1/10/2017
Borehole Diameter: 5.9"
Borehole Depth: 23 feet
Depth to Water: 4.29'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 18'			0-18'- Hand auger and blind drilled. No lithologic description available					
	18 to 23'	08:40	NA	18-23'- Dark brown to brown f. to vf. Sand loose, little Silt, wet, no odor Rec: 4.5'		90	SP	NA	Screened 20.37 to 22.37 ft BLS
				Well Development Initial Color: Gray Final Color: Lt. brown Initial Odor: None Final Odor: None Total Vol. Purged ≈ 10 gals 23 ft BLS - End of Boring					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -244
Geologist/Eng.: D. Siemaszko
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/9/17
Date Completed: 1/9/17
Borehole Diameter: 8 bms 5.9'
Borehole Depth: 23
Depth to Water: 2.50

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 18			0'-5' Post hole 5'-18' Drilled w/ no sampling					
	18 TO 23			18'-23' brown fine SAND, no odor		90	SP		Screened: 20 to 22 ft BLS
				Term. @ 23 well Development: Removed ~7 gallons @ ~1gpm, Brown, no Solids, No odor					

Reviewed by: Mike Brunt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-245
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/10/2017
Date Completed: 1/10/2017
Borehole Diameter: 5.9"
Borehole Depth: 23 ft BLS
Depth to Water: 3.90'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 18'	-	NA	0-18' - Hand auger and blind drilled. No lithologic description available				NA	
	18' to 23'		NA	18-23' - Dark brown f to vf. Sand, little Silt loose, wet, no odor Rec: 5'		100	SP	NA	Screened: 20.05 to 22.05 ft BLS
				Well Development Initial Color: Gray Final Color Odor: None Total Vol purged ~ 5gals 23 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0246
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/11/2017
Date Completed: 1/11/2017
Borehole Diameter: 5.9'
Borehole Depth: 23 ft BLS
Depth to Water: 4.77 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 18'	-	NA	0-18' - Hand auger and blind drilled. No lithologic description available					
	18' to 23'	-	NA	18-23: Brown f to vf. Sand, little Silt, loose, wet, no odor. Rec = 5' At 19.5' - Color change to olive green		100	SP	NA	Screened: 20.35 to 22.35 ft BLS
				Well Development Initial Color: Brown Final Color: Brown Odor: None Total Vol. removed ~ 10 gals					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-247
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/10/17
Date Completed: 11/10/17
Borehole Diameter: ~5.9"
Borehole Depth: 38'
Depth to Water: 3.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 33	-	NA	0'-5' Post hole 5'-33' Drilled ~~to~~ one w/ no sampling.					
	33' TO 38	-	NA	33'-38' Gray Mid SAND, frag. shell, Loose, wet, no odor		75	SP		Screened: 35.1 to 37.1 ft BLS
				Term. @ 38'-one completed as ASW247 Well Development: Removed ~ 10 gallons @ ~1gpm, Cloudy, no odor.					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0248
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/12/2017
Date Completed: 1/12/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 5.61'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	-	NA	0-33' - Hand auger and blud drilled. No lithologic description available					
	33' to 38'	-	NA	33-38' - Greenish gray f to vf. Sand, few f. shell frag, loose, wet, no odor		79	SP	NA	Screened: 35.27 to 37.27 ft BLS
				Well Development Initial Color: Gray Final Color: Cloudy odor: None Total vol. removed ~10 gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0249
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/12/2017
Date Completed: 1/12/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 5.10'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	-	NA	0-33' - Hand auger and blind drilled. No lithologic description available					
	33' to 38'	-	NA	33-38' - Greenish gray f. to vf. Sand, trace to few f. shell frag, loose, wet, no odor. Rec: 3.8'		76	SP	NA	Screened: 35.3 to 37.3 ft BLS
				Well Development Initial Color: Gray Final Color Odor: None Total Vol. Removed ~ 10 gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-250
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/19/17
Date Completed: 1/19/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 2.9'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33	-	NA	0'-5' Post hole 5'-33' Drilled w/ no sampling.					
	33 to 38			33' to 38' Brown fine Sand, wet, no odor		85	SP		Screened: 35 to 37 ft BLS
	38			well development: removed about 10 gallons @ ~1gpm, cloudy, no odor 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -25
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/19/17
Date Completed: 1/19/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.75'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33	-	NA	0'-5' Post hole 5'-33' Drilled w/ NO Sampling					
	33 to 38			33'-38' Brown fine SAND, wet, no odor		85	SP		Screened: 35.2 to 37.2 ft BLS
				well development: Removed ~10 gallons @ ~ 1gpm, cloudy, no odor 38 ft BLS - End of Boring					

Reviewed by: Mike Bunt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -[illegible]5252
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.20'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0 TO 33		-	NA	0'-5' Port hole 5'-33' Drilled W/NO Sampling					
33 TO 38				33'-38' Gray fine SAND, Loose, wet, NO odor		95%	SP		Screened: 35.1 to 37.1 ft BLS
38				Well Development: Removed ~10 gallons @ ~1 gpm, slightly Cloudy, NO odor 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-253
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.75'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 33	-	NA	0'-5' Post hole 5'-33' drilled w/ NO sampling					
	33 TO 38			33'-38' Gray f-m SAND, frag: shell, loose wet, Reductive odor from bio remediation.		95	SP		Screened: 34.9 to 36.9 ft BLS
				Development: Removed ~10 gallons @ ~1 gpm, cloudy, NO odor 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -254
Geologist/Eng.: D. Sitemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.50'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33	DNS ~~AH~~	NA	0'-5' post hole 5'-33' drilled w/ NO sampling					
33	33 TO 38			33-38' Gray fine SAND, frag. shell, loose, wet, no odor		98%	SP		Screened: 35 to 37 ft BLS
				Development: Removed ~ 10 gallons @ ~ 1gpm, cloudy, NO odor 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW ~~25 25 25~~ 25
Geologist/Eng.: D. Siemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 4.05'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0	0	—	NA	0'-5' Post hole drilled w/ No Sampling		0%			
10	10								
33	33								
	33			33'-38' Gray fine SAND, frag. shell, loose, wet, No odor			SP		Screened 35 to 37 ft BLS
	70								
38	38								
				well Peklopment: Removed ~10 gallons at ~1 gpm Waters Clear, No odor					
				38 ft BLS - End of Boring					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-256
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 2.75'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33	-	NA	0'-5' post hole 5'-33' Drilled w/ NO Sampling					
	33 to 38			33'-38' Gray fine SAND, Frag. shell, loose, wet, no odor Term. @ 38'			90	Sp	Screened: 35.2 to 37.2 ft BLS
				well Development: Removed ~ 10 gallons @ ~ 1 gpm, clear, no odor. 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-257
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/17/17
Date Completed: 1/17/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.21

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 33			0'-5' Post hole 5'-33' Drilled w/ no samplings.					
	33 TO			33'-38' Gray fine SAND, Little Frag. Shell, wet, no odor		80	SP		Screened 35.1 to 37.1 ft BLS
	38			well Development: Removed ~10 gallons @ ~1gpm, cloudy, no odor 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -258
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/7/17
Date Completed: 11/7/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33	—	NA	0'-5' Port hole 5'-33' Drilled w/ no sampling					
	33 to 38			33' to 38' Gray fine SAND, frag. Shell, loose, wet, no odor		85	SP		Screened: 35.3 to 37.3 ft BLS
	38			well development: removed ~ 10 gallons @ ~ 1 gpm, cloudy, NO odor 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 259
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/6/17
Date Completed: 11/16/17
Borehole Diameter: 5.9"
Borehole Depth: 38.0'
Depth to Water: 3.25'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 33	-	NA	0'-5' post hole 5'-33'					
	33 TO 38			33' ~~TO~~ 38' Gray fine SAND, frag. shell, Loose, Wet, No odor.		90%	SP		Screened: 35 to 37 Ft BLS
				well development: removed ~ 10 gallons @ ~ 1gpm, clear, no odor 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -260
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/10/17
Date Completed: 11/10/17
Borehole Diameter: 5.9"
Borehole Depth: 38 ft BLS
Depth to Water: 3.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
0 TO 33			NA	0'-5' Post hole 5'-33' Drilled w/ NO Sampling					
33 TO 38				33' to 38' Gray fine SAND, Frag. shell, Loose, wet, NO odor.		85%	Sp		Screened: 35 to 37 ft BLS
38				Term. @ 38' Developed: Removed ~ 10 gallons @ ~ 1gpm. Cloudy, NO odor.					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0261
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/13/2017
Date Completed: 1/13/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 2.73'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	-	NA	0-33'- Hand auger and blind drilled. No lithologic description available		NA	NA	NA	
	33' to 38'	-	NA	33-38'- Greenish gray f. to vf. Silty Sand, few f. shell frag, loose, no odor wet Rec: 3'		60	SM	NA	Screened: 35.1 to 37.1 ft BLS
				Well Development Initial Color: Gray Final Color: Cloudy Odor: None Total Vol. purged ~10gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -262
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/16/17
Date Completed: 1/16/17
Borehole Diameter: 5.5"
Borehole Depth: 38'
Depth to Water: 4.10'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 33'	-	NA	0'-5' post hole 5'-33' Drilled w/ no Sampling.					
	33 TO 38			33'-38' Gray fine SAND Frag, Shell, Loose, wet, no odor.					screened: 35.1 to 37.1 ft BLS
				Well Development: Removed ~10 gallons @ ~1gpm, slightly cloudy, no odor 38 Ft BLS - End of Boring					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-263
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/6/17
Date Completed: 11/6/17
Borehole Diameter: 5.9"
Borehole Depth: 38 ft BLS
Depth to Water: 4.00 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33			0'-5' post Hole 5'-33' Drilling w/ no Sampling					
	33 to 38			33'-38' Gray fine SAND, little Fray shell, loose, wet, no odor		85%	SP		Screened: 35 to 37 ft BLS
				Term. @ 38' Development: Removed about 10 gallons @ ~ 10 psi 1 gpm, Cloudy, no odor.					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0264
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/13/2017
Date Completed: 1/13/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.21'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	-	NA	0-33' - Hand auger and blind drilled. No lithologic description available		NA	NA	NA	
	33' to 38'	-	NA	33 - 37.2 - Greenish gray f. to vf. Sand, few f. shell frag, loose, wet, no odor 37.2 - 38' - Greenish gray f. to vf. Sand and f. Shell Frag, loose, wet, no odor Rec: 3.5'		70	SP	NA	Screened: 35.1 to 37.1 ft BLS
				Well Development Initial Color: Gray Final Color: Cloudy Odor: None Total vol. purged ~ 10 gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 0265
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/13/2017
Date Completed: 1/13/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.15' ↓ when measured

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	-	NA	0-33' - Hand auger and blind drilled. No lithologic description available		NA	NA	NA	
	33' to 38'	-	NA	33-38' - Greenish gray f. to vf. Sand, loose, wet, no odor. At 36.75 - Few f. Shell fragments Rec: 2.75'		55	SP	NA	Screened: 35.37 to 37.37 ft BLS
				Well Development Initial Color: Gray Final Color: Cloudy Odor: None Total Vol. removed ~10 gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW ~~-ASW~~ 266
Geologist/Eng.:
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/6/17
Date Completed: 11/6/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.50 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0' TO 33'		NA	0-5' post hole 5'-33' Drilled w/ no sampling.					
	33 TO 38			33'-38' Gray fine SAND, frag shell, wet, NO odor. Trip @ 38'		90%	SP		Screened: 34.9 TO 36.9 ft BLS
				well Development: Removed ~7 gallons @ ~1 gpm, slightly cloudy, No odor.					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0267
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: ~~1/12/2~~ RT 1/13/2017
Date Completed: 1/13/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.75'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	-	NA	0-33' - Hand auger and blind drilled. No lithologic description available					
	33' to 38'	-	NA	33 - 36.25 - Greenish gray f to vf. Silty Sand, loose, wet no odor		75	SM	NA	Screened: 35.07 to 37.07 ft BLS
				36.25 - 38 - Greenish gray f. to vf. Sand and f. Shell frag, loose, wet, no odor. Rec: 3.75			SP	NA	
				Well Development Initial Color: Gray Final Color: Cloudy Odor: None Total vol. purged ~10 gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-268
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/9/2017
Date Completed: 1/9/2017
Borehole Diameter: ~~6~~ RT 5.9"
Borehole Depth: 38 feet
Depth to Water: NR

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
				0-33' - NA, blind drilled to 38' bls					
	33' to 38'			33'-38': Dark gray f to vf. PG Sand (SP) loose, wet, no odor, little f. shell frag, few silt Rec: 3.0'		60	SP	NA	Screened: 35.42 to 37.42 ft BLS
				EOB - 38 ft BLS DTW: 3.45' BTOC TD: 38.15' BTOC Well Development Initial Color: Gray Final Color: Cloudy Initial Odor: None Final Odor: None Total Vol. purged ≈ 10 gals					

Reviewed by: Mike Burke

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-269
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/9/2017
Date Completed: 1/10/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 4.15'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33	-	NA	0-33' - Blind drilled, no lithologic description available					
	33 to 38	-	NA	33'-38' - Dark greenish gray f to vf. Sand, few f. shell frag, loose, wet, no odor. Rec = 3.4'		70	SP	NA	Screened: 34.8 to 36.8 ft BLS
				EOB - 38 ft BLS DTW: 4.15' TD: 37.8' Well Development Initial Color: Gray Final Color: Cloudy Slightly turbid Odor: None Total Vol purged: ~10 gals					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0270
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/12/2017
Date Completed: 1/12/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 3.47'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	-	NA	0-33' - Hard auger and blind drilled. No lithologic description available					
	33' to 38'	-	NA	33-38' - Greenish gray f. to vf. Sand, loose, wet, no odor. Rec: 2.5'		50	SP	NA	Screened: 35.13 to 37.13 ft BLS
				Well Development Initial Color: Gray Final Color: Cloudy Odor: None Total Vol. purged ~10 gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 271
Geologist/Eng.: D. Siremore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/01/17
Date Completed: 11/01/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 2.90 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33	-	NA	0'-5' Post Hole 5'-33' Drilled w/ NO Sampling					
	33 To 38			33'-38' Brown fine Sand, wet, NO odor		~~85~~	~~85~~ SP		Screened: 35.2 to 37.2 ft BLS
				Term @ 38' Well Development: Removed ~ 10 gallons @ ~ 1gpm, Brown, NO ~~settings~~ ons solids, NO odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 272
Geologist/Eng.: D. Sicemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/10/17
Date Completed: 1/10/17
Borehole Diameter: 5.9"
Borehole Depth: 38 ft BLS
Depth to Water: 3.55 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33	-	NA	0'-5' Post hole 5'-33' Drilled w/ no Sampling					
	33 to 38			33' to 38' Brown fine SAND, wet, no odor Term @ 38'		90	SP		Screened: 35 to 37 ft BLS
				Well Development: Removed about 10 gallons at ~ 1gpm, Brown, no solids, no odor					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW -273
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 11/10/17
Date Completed: 11/10/17
Borehole Diameter: 5.9"
Borehole Depth: ~~38~~ '
Depth to Water: 3.95 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 TO 33	-	NA	0'-5' Post hole 5'-33' Drilled w/ no sampling					
	33 TO			33'-38' gray med. SAND, little frag shell, loose, wet, no odor					Screened: 35 to 37 ft BLS
	38			Term @ 38' Well Development: Removed ~7 gallons @ ~1gpm, Cloudy, ~~odor~~ no odor					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0274
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/12/2017
Date Completed: 1/12/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 4.95'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	-	NA	0-33' - Hand auger and blind drilled. No lithologic description available					
	33' to 38'	-	NA	33-38' - Greenish gray f to vf. Sand, loose, wet, no odor. Rec: 3.75'		75	SP	NA	Screened: 34.97 to 36.97 ft BLS
				Well Development Initial Color: Gray Final Color: Cloudy Odor: None Total vol. removed ~ 10 gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burt

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 275
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/11/2017
Date Completed: 1/11/2017
Borehole Diameter: 5.9"
Borehole Depth: 38 ft BLS
Depth to Water: 4.82 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'			0-33' - Hand auger and blind drilled. No lithologic description available					
	33' to 38'	-	NA	33-38' - Greenish gray f. to vf. Sand, few Silt, loose, wet, no odor Rec: 3'		60	SP	NA	Screened: 34.87 to 36.87 ft BLS
				MW Development: ~10 gal at ~1 gpm					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW-0276
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/12/2017
Date Completed: 1/12/2017
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 4.90'

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	-	NA	0-33' - Hand auger and blind drilled. No lithologic description available					
	33' to 38'	-	NA	33-38' - Greenish gray f. to vf. Sand, loose, wet, no odor. Rec: 2'		40	SP	NA	Screened: 35.57 to 37.57 ft BLS
				Well Development Initial Color: Gray Final Color: cloudy Odor: None Total vol. removed ~10 gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burton

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW- 277
Geologist/Eng.: Ryan Tuttle
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/11/2017
Date Completed: 1/11/2017
Borehole Diameter: 5.9"
Borehole Depth: 38 ft BLS
Depth to Water: 5.10 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33'	—	NA	0-33' - Hand auger and blind drilled. No ~~lithog~~ NT lithologic description available					
	33' to 38'	-	NA	33-38: Greenish gray f to vf Sand, trace f. shell frag, loose, wet, no odor. Rec: 3.5'		70	SP	NA	Screened: 34.1 to 36.1 ft BLS
				Well Development Initial Color: Gray Final Color: Cloudy Odor: None Total Vol. purged ~10gals 38 ft BLS - End of Boring					

Reviewed by: Mike Burke

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW - 278
Geologist/Eng.: D. Sizemore
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 7
Date Started: 1/10/17
Date Completed: 1/10/17
Borehole Diameter: 5.9"
Borehole Depth: ~~5.9"~~ 38'
Depth to Water: 3.75 ft BLS

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 To 33	-	NA	0'-5' Post hole 5'-33' Drilled w/ NO Sampling					
	33 To 38			33'-38' brown fine SAND, wet, no odor Term. @ 38'		90	SP		Screened: 34.8 to 36.8 ft BLS
				well Development: Removed ~7 gallons @ ~ 1gpm, Brown, no solids, no odor					

Reviewed by: Mike Burch

Geosyntec consultants

BORING LOG

Project No.: FR1352E Phase 08
Site Name: Launch Complex 39B (LC39B)
Boring I.D.: ASW 279
Geologist/Eng.: Zackary Munger
Drilling Company: Groundwater Protection
Drilling Method: Rotosonic
Comments:

Page 1 of 1
Date Started: 1/25/17
Date Completed: 1/25/17
Borehole Diameter: 5.9"
Borehole Depth: 38'
Depth to Water: 4.7' bls

Depth	Sample Interval	Time	Blows / 6 in.	Lithologic Description	Symbolic Log	% Recovery	USCS Code	OVA Headspace	Comments
	0 to 33			0-5' Post hole 5-33' Drilled w/no sample					
	33 to 38			33-33.5' Brown fine SAND, wet, no odor 33.5-38' Gray fine SAND, loose, wet, no odor		85%	SP SP		Screened 35.3-37.3 ft BLS
				Terminated @ 38' bls, completed as ASW-279 Well development: Removed 10 gal @ 1 gpm, clear, no odor					

Reviewed by: Mike Burch

JUNE THROUGH JULY 2017
AIR SPARGE SYSTEM START-UP

FIELD FORMS

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/26/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC; MAEE, Mil Con		
WEATHER: 73º - 86º, cloudy afternoon thunderstorms, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Angelo Ippollito	FECC	Superintendent
Dustin Lupis	FECC	Tech
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Kim Manchester	Mil Con	Project Manager
Rebecca Daprato	Geosyntec	Engineer of Record
Jim Langenbach (JL)	Geosyntec	Principal
Jim Frydl (JF)	MAEE	Regional Manager

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/26/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives site; Geosyntec, FECC, Mil Con and MAEE on site, DMS conducts tailgate meeting and discuss daily activities.

8:30 JF and Kim turn on electrical main and check out electrical components.

9:30 Electrical check complete. Rebecca and JL work with JF to become familiar with system operation and make programming changes to system as needed.

DMS works with FECC inspecting distribution lines, manifolds, meter and valves and repairing as needed. Begin checking ASW flow meters to ensure flow to each ASW.

16:00 Begin Phase II alert. All personnel take cover.

16:00 Still in Phase II, all personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 18

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of JF checking electrical components.



Photograph No. 2

Direction: NA

Description: View of typical ASW flow meter assembly within the NEMA enclosures.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/27/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC; MAEE		
WEATHER: 73º - 86º, clear, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Angelo Ippollito	FECC	Superintendent
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Olivia Cain	Geosyntec	Engineer
Rebecca Daprato	Geosyntec	Engineer of Record
Eric Sager	Geosyntec	Principal
Jim Frydl (JF)	MAEE	Regional Manager
Samuel Graves	Geosyntec	Technician

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/27/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives site; Geosyntec, FECC, and MAEE on site, DMS conducts tailgate meeting and discuss daily activities.

7:30 Rebecca works with JF to become familiar with system operation, and make programming changes to system as needed.

Eric Sager observes system operation and inspects distribution piping, valves, flow meters and manifolds for necessary repairs. Begins compiling punch list.

DMS and Olivia collect pre-operation water levels.

Samuel begins balancing system.

10:00 DMS works with FECC in walking grounds and checking for blowouts, ponding and leaking monitoring wells. Olivia joins Rebecca and JF learning system operations.

12:00 DMS works with FECC repairing leaking wells.

14:00 Rebecca departs site.

15:30 Begin Phase II alert. All personnel take cover.

16:00 Still in Phase II. All personnel depart site.

No photos taken by DMS.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/28/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC; MAEE		
WEATHER: 75º - 86º, cloudy, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Angelo Ippollito	FECC	Superintendent
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Olivia Cain	Geosyntec	Engineer
Samuel Graves	Geosyntec	Tech
Eric Sager	Geosyntec	Principal
Jim Frydl (JF)	MAEE	Regional Manager

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/28/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives site; Geosyntec, FECC, and MAEE on site, DMS conducts tailgate meeting and discuss daily activities.

8:00 Samuel and Olivia begin collect AS System readings and balancing system (see O&M forms for details). JF continues fine tuning system programming. FECC begins grouting and gluing PVC caps on bio-injection wells and repairing leaks

DMS and Eric test ASW flow meters by connecting a Dwyer brand flow meter in line with system flow meter. Both flow meters are reading 2 CFM.

9:30 DMS joins FECC in grouting wells and fixing leaks in MWs.

DMS, Eric and FECC walk site to observe ponding and blowouts; discuss ways to correct. Includes reducing flow rates, digging out and determining causes and/or grout blowouts.

16:00 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 18

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of bio-injection well being abandoned by FECC.



Photograph No. 2

Direction: NA

Description: View of grouted bio-injection well.



Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Samuel Grooms **Date:** 6/28/17 **Time:** 1300

Maintenance & Monitoring

Item	Completed (yes/no)	Comments or Notes
System Operational on Arrival ?		
System Operational on Departure?		
Alarms on Upon Arrival?		
Filters Checked?		
Condensate Checked?		
Oil Level Checked? How Full?		
WD40 Applied to Manifold Enclosure Joints and Bolts? (Quarterly)		
Maintenance Needed?		
Run Time and Electric Reading	Hour Meter:	Electric Meter:

Air Sparge Compressor Readings - By Zone

Zone 1 - System, Trailer, and Pre-Receiver Tank Parameters

Trailer Readings During Zone 1 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 1 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Zone 2 - System, Trailer, and Pre-Receiver Tank Parameters

Trailer Readings During Zone 2 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 2 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Zone 3 - System, Trailer, and Pre-Receiver Tank Parameters

Trailer Readings During Zone 3 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101
		85.3	104.3	328	95.3

Zone 3 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.2	65.6	271	91.2	65

Zone 4 - System, Trailer, and Pre-Receiver Tank Parameters

Trailer Readings During Zone 4 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 4 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Air Sparge Readings - By Leg (L1 through L13)

Observed Flow Rate (ACFM)	FT-201	FT-202	FT-203	FT-204	FT-205	FT-206	FT-207	FT-208
Pressure (psi)	PI-201	PI-202	PI-203	PI-204	PI-205	PI-206	PI-207	PI-208
Corrected Flow Rate (SCFM)	0	0	0	0	0	0	0	0
Observed Flow Rate (ACFM)	FT-209	FT-210	FT-211	FT-212	FT-213	$Corrected\ Flow\ Rate = Observed\ Flow\ Rate * \left(\sqrt{\frac{SG * T + 460}{36 * [P + 14.7]}}\right)^{-1}$		
	126	107	128					
Pressure (psi)	PI-209	PI-210	PI-211	PI-212	PI-213			
	33.5	26.9	34.1					
Corrected Flow Rate (SCFM)	0	0	0	0	0			

Groundwater Levels (ft BTOC)

MW0011 (Z1)	MW0011 (Z3)	MW0012 (Z1)	MW0012 (Z3)	MW0014 (Z3)	MW0015 (Z3)	MW0021 (Z2)	MW0022 (Z2)	MW0023 (Z2)
MW0030 (Z1)	MW0032 (Z4)	MW0033 (Z1)	MW0036 (Z4)	MW0037 (Z1)	MW0040 (Z4)	Note: >0 indicates water flowing from well upon well cap removal; Z# indicates Zone in operation		

Geosyntec consultants

Notes:

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: ~~Ken~~ Samuel Graves **Date:** 6/28/17 **Time:** 1300

Air Sparge System Readings

MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	ASW82		ASW83		ASW84	
	ASW81						
	0		0		0		0
	ASW85	ASW86		ASW87		ASW88	
	0		0		0		0
	ASW89	ASW90		ASW91		ASW92	
	0		0		0		0
	ASW93	ASW94		ASW95		ASW96	
	0		0		0		0
	ASW97	ASW98		ASW99		ASW100	
	0		0		0		0
	ASW101	ASW102		ASW103		ASW104	
	0		0		0		0
	ASW105	ASW106		ASW107		ASW108	
	0		0		0		0
	ASW109	ASW110		ASW111		ASW112	
	0		0		0		0
	ASW113	ASW114		ASW115		ASW116	
	0		0		0		0
	ASW117	ASW118		ASW119		ASW120	
	0		0		0		0
	ASW121	ASW122		ASW123		ASW124	
	0		0		0		0
	ASW125	ASW126		ASW127		ASW128	
	0		0		0		0
	ASW129	ASW130		ASW131		ASW132	
	0		0		0		0
	ASW133	ASW134		ASW135		ASW136	
	0		0		0		0
	ASW137	ASW138		ASW139		ASW140	
	0		0		0		0
	ASW141	ASW142		ASW143		ASW144	
	0		0		0		0
	ASW145	ASW146		ASW147		ASW148	
	0		0		0		0
32	ASW149 4	32	ASW150 3	33	ASW151 4	32	ASW152 3.5
	0		0		0		0
33	ASW153 2.5	32	ASW154 3	31	ASW155 3.5	33	ASW156 4
	0		0		0		0
33	ASW157 3.5	32	ASW158 2.5	32	ASW159 3	32	ASW160 3.5
	0		0		0		0
32	ASW161 3	32	ASW162 3.5	33	ASW163 4	32	ASW164 2
	0		0		0		0

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Samuel Grimes **Date:** 6/28/17 **Time:** 1300

Air Sparge System Readings

MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)		Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)		Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)		Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	
ASW165			**ASW166**			**ASW167**			**ASW168**		
32	1	0	32	1.5	0	32	2	0	32	2	0
ASW169			**ASW170**			**ASW171**			**ASW172**		
31	2	0	32	1	0	31	3	0	32	2	0
ASW173			**ASW174**			**ASW175**			**ASW176**		
32	2	0	32	1.5	0	31	1.5	0	32	3	0
ASW177			**ASW178**			**ASW179**			**ASW180**		
32	2	0	31	1.5	0	28	4	0			0
ASW181			**ASW182**			**ASW183**			**ASW184**		
		0			0			0			0
ASW185			**ASW186**			**ASW187**			**ASW188**		
		0			0			0			0
ASW189			**ASW190**			**ASW191**			**ASW192**		
		0			0			0			0
ASW193			**ASW194**			**ASW195**			**ASW196**		
		0			0			0	31	2	0
ASW197			**ASW198**			**ASW199**			**ASW200**		
32	2.5	0	31	2.5	0	32	2.5	0	30	3	0
ASW201			**ASW202**			**ASW203**			**ASW204**		
31	3	0	20	1	0	26	1	0	25	1	0
ASW205			**ASW206**			**ASW207**			**ASW208**		
25	1	0	25	1.5	0	26	1	0	25	1	0
ASW209			**ASW210**			**ASW211**			**ASW212**		
27	1	0	25	1	0	25	1	0	25	1	0
ASW213			**ASW214**			**ASW215**			**ASW216**		
26	2	0	25	1	0	25	1.5	0	25	1	0
ASW217			**ASW218**			**ASW219**			**ASW220**		
26	1	0	25	1.5	0	26	1.5	0	26	1	0
ASW221			**ASW222**			**ASW223**			**ASW224**		
25	2.5	0	22	1	0	26	1.5	0	24	2	0
ASW225			**ASW226**			**ASW227**			**ASW228**		
26	1.5	0	26	2	0	26	1	0	23	3	0
ASW229			**ASW230**			**ASW231**			**ASW232**		
25	1.5	0	26	1.5	0	26	2	0	24	25	0
ASW233			**ASW234**			**ASW235**			**ASW236**		
25	2	0			0			0			0
ASW237			**ASW238**			**ASW239**			**ASW240**		
		0			0			0			0
ASW241			**ASW242**			**ASW243**			**ASW244**		
		0			0			0			0

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Samuel Graves **Date:** 6/28/17 **Time:** 1300

Air Sparge System Readings

MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)							
ASW165		ASW166		ASW167		ASW168		
	0		0		0			0
ASW169		ASW170		ASW171		ASW172		
	0		0		0			0
ASW173		ASW174		ASW175		ASW176		
	0		0		0			0
ASW177		ASW178		ASW179		ASW180		
	0		0		0			0
ASW181		ASW182		ASW183		ASW184		
	0		0		0			0
ASW185		ASW186		ASW187		ASW188		
	0		0		0			0
ASW189		ASW190		ASW191		ASW192		
	0		0		0			0
ASW193		ASW194		ASW195		ASW196		
	0		0		0			0
ASW197		ASW198		ASW199		ASW200		
	0		0		0			0
ASW201		ASW202		ASW203		ASW204		
	0		0		0			0
ASW205		ASW206		ASW207		ASW208		
	0		0		0			0
ASW209		ASW210		ASW211		ASW212		
	0		0		0			0
ASW213		ASW214		ASW215		ASW216		
	0		0		0			0
ASW217		ASW218		ASW219		ASW220		
	0		0		0			0
ASW221		ASW222		ASW223		ASW224		
	0		0		0			0
ASW225		ASW226		ASW227		ASW228		
	0		0		0			0
ASW229		ASW230		ASW231		ASW232		
	0		0		0			0
ASW233		ASW234		ASW235		ASW236		
	0	14	5.6	17	5.5	14	5.2	
			0		0			0
ASW237		ASW238		ASW239		ASW240		
15	5	14	5.5	21.5	4	20	5	
	0		0		0			0
ASW241		ASW242		ASW243		ASW244		
16	5	17	5.5	17	5.2	17	5.2	
	0		0		0			0

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: 6/28/17 **Date:** 6/28/17 **Time:** 1300

Air Sparge System Readings

MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)
ASW245	
17	5.2 / 0
ASW246	
18	5 / 0
ASW247	
22	4.5 / 0
ASW248	
23	4 / 0
ASW249	
22	4 / 0
ASW250	
23	3 / 0
ASW251	
23	3 / 0
ASW252	
21	3.4 / 0
ASW253	
22	3.5 / 0
ASW254	
22	4 / 0
ASW255	
21	4 / 0
ASW256	
22	3.5 / 0
ASW257	
21	4 / 0
ASW258	
21	4.5 / 0
ASW259	
22	4.5 / 0
ASW260	
22	5 / 0
ASW261	
22	5 / 0
ASW262	
22	4.5 / 0
ASW263	
22	4.5 / 0
ASW264	
22	3.8 / 0
ASW265	
23	4.5 / 0
ASW266	
22	3.5 / 0
ASW267	
22	4.0 / 0
ASW268	
22	2.5 / 0
ASW269	
22	4.2 / 0
ASW270	
23	3.5 / 0
ASW271	
22	4.5" / 0
ASW272	
21	5 / 0
ASW273	
23	2.0 / 0
ASW274	
22	4.5 / 0
ASW275	
22	3.0 / 0
ASW276	
21	4.0 / 0
ASW277	
22	4.5 / 0
ASW278	
22	4.5 / 0
ASW279	
22	5.8 / 0

Technician Signature:

Reviewer Signature:

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/29/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC; MAEE		
WEATHER: 75º - 85º, cloudy, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Angelo Ippollito	FECC	Superintendent
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Jim Frydl (JF)	MAEE	Regional Manager
Zack Munger	Geosyntec	Engineer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/29/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives site; Geosyntec, FECC, and MAEE on site, DMS conducts tailgate meeting and discuss daily activities.

8:00 Zack works in AS trailer with JF learning system operation and programming.

DMS work with FECC continuing to abandon wells, fix leaking wells, adjusting flow to try to reduce ponding and final construction cleanup.

16:00 Clean up and secure site.

16:30 All personnel depart site.

No photos taken today.

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Jack Munger **Date:** 8/29/17 **Time:** 1130

Maintenance & Monitoring

Item	Completed (yes/no)	Comments or Notes
System Operational on Arrival ?	No	Ongoing startup activities
System Operational on Departure?		
Alarms on Upon Arrival?		
Filters Checked?		
Condensate Checked?		
Oil Level Checked? How Full?		
WD40 Applied to Manifold Enclosure Joints and Bolts? (Quarterly)		
Maintenance Needed?		

Run Time and Electric Reading	Hour Meter: NR	Electric Meter: NR

Air Sparge Compressor Readings - By Zone

Zone 1 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 1 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 1 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Zone 2 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 2 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 2 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Zone 3 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 3 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 3 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Zone 4 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 4 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 4 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Air Sparge Readings - By Leg

Observed Flow Rate (ACFM)	Leg Z2-L4 FT-201	Leg Z2-L2 FT-202	Leg Z2-L1 FT-203	Leg Z2-L3 FT-204	Leg Z1-L1 FT-205	Leg Z1-L2 FT-206	Leg Z1-L3 FT-207	Leg Z1-L4 FT-208
Pressure (psi)	PI-201	PI-202	PI-203	PI-204	PI-205	PI-206	PI-207	PI-208
Corrected Flow Rate	0	0	0	0	0	0	0	0

Observed Flow Rate (ACFM)	Leg Z3-L2 FT-209	Leg Z3-L3 FT-210	Leg Z3-L1 FT-211	Leg Z4-L1 FT-212	Leg Z4-L2 FT-213	$Corrected\ Flow\ Rate = Observed\ Flow\ Rate * \left(\sqrt{\frac{SG * T + 460}{36 * [P + 14.7]}}\right)^{-1}$
Pressure (psi)	PI-209	PI-210	PI-211	PI-212	PI-213	
Corrected Flow Rate	0	0	0	0	0	

Groundwater Levels (ft BTOC)

MW0011 (Z1)	MW0011 (Z3)	MW0012 (Z1)	MW0012 (Z3)	MW0014 (Z3)	MW0015 (Z3)	MW0021 (Z2)	MW0022 (Z2)	MW0023 (Z2)
MW0030 (Z1)	MW0032 (Z4)	MW0033 (Z1)	MW0036 (Z4)	MW0037 (Z1)	MW0040 (Z4)	Note: >0 indicates water flowing from well upon well cap removal; Z# indicates Zone in operation		

Geosyntec consultants

Notes:

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Zachary Mumaw **Date:** 6/29/17 **Time:** 1130

Manifold Group Temperature Readings (°F)

Zone 1 (Z1):	Zone 2 (Z2):	Zone 3 (Z3):	Zone 4 (Z4):
96.3	93.4	94.0	NR

Air Sparge System Readings

MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)
ASW01		ASW02		ASW03		ASW04	
29	2.5	30	2.5	30	2	29	2
	0		0		0		0
ASW05		ASW06		ASW07		ASW08	
30	2	29	2	30	2	32	2
	0		0		0		0
ASW09		ASW10		ASW11		ASW12	
28	2	28	2	29	2.5	30	2
	0		0		0		0
ASW13		ASW14		ASW15		ASW16	
30	2	32	2	32	2	28	2
	0		0		0		0
ASW17		ASW18		ASW19		ASW20	
27	2	30	2	31	2	31	2
	0		0		0		0
ASW21		ASW22		ASW23		ASW24	
28	2	29	1.5	30	2	30	2
	0		0		0		0
ASW25		ASW26		ASW27		ASW28	
30	2	30	2	31	1.5	30	2
	0		0		0		0
ASW29		ASW30		ASW31		ASW32	
28	2	30	2	30	2	30	2.5
	0		0		0		0
ASW33		ASW34		ASW35		ASW36	
29	2	29	2	30	2	29	2
	0		0		0		0
ASW37		ASW38		ASW39		ASW40	
29	2	29	2	30	2	29	2
	0		0		0		0
ASW41		ASW42		ASW43		ASW44	
26	2	27	2	27	2	26	2
	0		0		0		0
ASW45		ASW46		ASW47		ASW48	
26	2	25	2	28	2	27	2
	0		0		0		0
ASW49		ASW50		ASW51		ASW52	
27	2	25	2	26	2	25	2
	0		0		0		0
ASW53		ASW54		ASW55		ASW56	
24	2	28	1	25	2	24	2
	0		0		0		0
ASW57		ASW58		ASW59		ASW60	
30	1.5	29	2	29	1.5	29	1.5
	0		0		0		0
ASW61		ASW62		ASW63		ASW64	
29	1.5	29	2	29	1.5	29	
	0		0		0		0
ASW65		ASW66		ASW67		ASW68	
29	2	31	2	32	2	31	2.5
	0		0		0		0
ASW69		ASW70		ASW71		ASW72	
31	2	32	2	31	2	32	2.5
	0		0		0		0
ASW73		ASW74		ASW75		ASW76	
32	2.5	32	2	33	2	30	2
	0		0		0		0
ASW77		ASW78		ASW79		ASW80	
31	0	32	3	33	4	32	2
	0		0		0		0

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Zachary Munger **Date:** 6/29/17 **Time:** 1130

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.			
ASW81		**ASW82**		**ASW83**	**ASW84**
30	2 / 0	33	2 / 0	33	1.5 / 0	33	1.5 / 0
ASW85		**ASW86**		**ASW87**	**ASW88**
27	2 / 0	32	1.5 / 0	29	2 / 0	32	<1 / 0
ASW89		**ASW90**		**ASW91**	**ASW92**
33	1.5 / 0	29	2 / 0	31	2 / 0	31	2 / 0
ASW93		**ASW94**		**ASW95**	**ASW96**
33	<1 / 0	32	2 / 0	31	2 / 0	31	2 / 0
ASW97		**ASW98**		**ASW99**	**ASW100**
32	2 / 0	31	2 / 0	33	2 / 0	32	2 / 0
ASW101		**ASW102**		**ASW103**	**ASW104**
31	2 / 0	30	2 / 0	32	2 / 0	31	1.5 / 0
ASW105		**ASW106**		**ASW107**	**ASW108**
31	2.5 / 0	32	3 / 0	33	2 / 0	32	2.5 / 0
ASW109		**ASW110**		**ASW111**	**ASW112**
34	2.5 / 0	33	2.5 / 0	34	2 / 0	34	2 / 0
ASW113 32		**ASW114**		**ASW115**	**ASW116**
35	~~33~~ 2 / 0	32	2 / 0	34	2 / 0	34	2.5 / 0
ASW117		**ASW118**		**ASW119**	**ASW120**
31	1.5 / 0	33	2.5 / 0	32	2 / 0	33	2 / 0
ASW121		**ASW122**		**ASW123**	**ASW124**
33	2 / 0	32	2 / 0	34	2 / 0	32	2 / 0
ASW125		**ASW126**		**ASW127**	**ASW128**
34	2 / 0	32	2 / 0	33	2 / 0	32	2 / 0
ASW129		**ASW130**		**ASW131**	**ASW132**
33	2 / 0	34	~~2.5~~ 2 / 0	33	1.5 ~~2.5~~ / 0	33	2 ~~2.5~~ / 0
ASW133		**ASW134**		**ASW135**	**ASW136**
33	2 ~~0.5~~ / 0	32	1.5 / 0	33	2 / 0	33	2 / 0
ASW137		**ASW138**		**ASW139**	**ASW140**
32	2.5 / 0	33	2 / 0	33	2.5 / 0	33	2 / 0
ASW141		**ASW142**		**ASW143**	**ASW144**
33	2 / 0	33	2 / 0	33	2 / 0	33	2.5 / 0
ASW145		**ASW146**		**ASW147**	**ASW148**
32	2 / 0	32	3.5 / 0	33	2.5 / 0	33	2.5 / 0
ASW149		**ASW150**		**ASW151**	**ASW152**
30	2.5 / 0	31	2.5 / 0	33	2.5 / 0	32	2.5 / 0
ASW153		**ASW154**		**ASW155**	**ASW156**
34	2.5 / 0	33	3 / 0	30	2.5 / 0	32	2.5 / 0
ASW157		**ASW158**		**ASW159**	**ASW160**
32	2.5 / 0	32	2.5 / 0	32	2.5 / 0	32	2.5 / 0
ASW161		**ASW162**		**ASW163**	**ASW164**
33	2.5 / 0	31	2.5 / 0	32	2.5 / 0	32	1.5 / 0

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Zackary Murphy **Date:** 6/29/17 **Time:** 1130

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.

ASW165		ASW166		ASW167		ASW168	
32	<1	32	1.5	32	1	32	1.5
	0		0		0		0
ASW169		**ASW170**		**ASW171**		**ASW172**	
33	<1	31	2	30	1.5	32	1.5
	0		0		0		0
ASW173		**ASW174**		**ASW175**		**ASW176**	
32	1.5	32	1.5	31	<1	32	2
	0		0		0		0
ASW177		**ASW178**		**ASW179**		**ASW180**	
32	1.5	31	1	27	2	11	2
	0		0		0		0
ASW181		**ASW182**		**ASW183**		**ASW184**	
30	2	29	2	30	1.5	29	2
	0		0		0		0
ASW185		**ASW186**		**ASW187**		**ASW188**	
30	1.5	30	1.5	30	1.5	30	2
	0		0		0		0
ASW189		**ASW190**		**ASW191**		**ASW192**	
30	2	30	2	30	2	29	2
	0		0		0		0
ASW193		**ASW194**		**ASW195**		**ASW196**	
29	2	29	2	~~27~~ 29	2	30	2
	0		0		0		0
ASW197		**ASW198**		**ASW199**		**ASW200**	
31	2	30	2	33	2.5	28	2
	0		0		0		0
ASW201		**ASW202**		**ASW203**		**ASW204**	
29	2	20	1.5	26	1	25	1
	0		0		0		0
ASW205		**ASW206**		**ASW207**		**ASW208**	
25	1.5	25	2	26	1	26	1
	0		0		0		0
ASW209		**ASW210**		**ASW211**		**ASW212**	
27	1	25	1	25	1	26	1
	0		0		0		0
ASW213		**ASW214**		**ASW215**		**ASW216**	
26	2	26	1	25	2	26	1
	0		0		0		0
ASW217		**ASW218**		**ASW219**		**ASW220**	
26	1	26	1.5	27	2	26	1
	0		0		0		0
ASW221		**ASW222**		**ASW223**		**ASW224**	
25	2	28	1.5	26	~~26~~ ZM 2	27	1.5
	0		0		0		0
ASW225		**ASW226**		**ASW227**		**ASW228**	
26	2	27	2	27	1	21	1.5
	0		0		0		0
ASW229		**ASW230**		**ASW231**		**ASW232**	
26	2	26	2	26	~~26~~ ZM 2	21	1.5
	0		0		0		0
ASW233		**ASW234**		**ASW235**		**ASW236**	
26	2						
	0		0		0		0
ASW237		**ASW238**		**ASW239**		**ASW240**	
	0		0		0		0
ASW241		**ASW242**		**ASW243**		**ASW244**	
	0		0		0		0

ZM Zone 4 not operated

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Zackary Munger & **Date:** 6/29/17 **Time:** 1120

Air Sparge System Readings

Pressure (PSI) / Flow (CFM) / Corrected Flow (SCFM)							
MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.							
ASW245		ASW246		ASW247		ASW248	
	0		0		0		0
ASW249		ASW250		ASW251		ASW252	
	0		0		0		0
ASW253		ASW254		ASW255		ASW256	
	0		0		0		0
ASW257		ASW258		ASW259		ASW260	
	0		0		0		0
ASW261		ASW262		ASW263		ASW264	
	0		0		0		0
ASW265		ASW266		ASW267		ASW268	
	0		0		0		0
ASW269		ASW270		ASW271		ASW272	
	0		0		0		0
ASW273		ASW274		ASW275		ASW276	
	0		0		0		0
ASW277		ASW278		ASW279			
	0		0		0		

ASW248 Zone 4 not operated

Technician Signature: Zack Munger

Reviewer Signature:

* Zone 4 was not operated on 6/29
* Zones 1-3 were cycled at ~~45~~ minutes intervals to facilitate flow balancing and an initial set of flow measurements

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/30/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC; MAEE		
WEATHER: 75º - 86º, cloudy, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Parker Duttenhauer	FECC	Operator
Jim Frydl (JF)	MAEE	Regional Manager
Samuel Graves	Geosyntec	Tech

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/30/17	
DESCRIPTION: Air Sparge System Startup	**PROJECT NO.:** FR1352E	**TASK NO.:** 18

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; Geosyntec and MAEE on site, DMS conducts tailgate meeting and discuss daily activities.

8:00 Samuel begins balancing system and completing system O&M (see O&M forms for details). JF continues fine-tuning system.

8:30 Mike Deliz on site. Mike informs DMS that signs and construction fence need to be installed to warn personnel of treatment system operation and flooding conditions.

9:00 Mike Deliz departs site. DMS begin install construction fence and signs.

10:00 Parker of FECC arrives on site and assists DMS with installing construction fence and installing signs.

13:00 Parker departs site.

15:30 Site secured; all personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 18

SITE PHOTOGRAPHS

Photograph No. 1 Direction: West Description: View of construction fence installed south of ventilation tunnel.	
Photograph No. 2 Direction: South Description: View of construction fence installed by Zone 2.	

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: SAMUEL GRAVES | Date: 6/20/17 | Time: 1000

Maintenance & Monitoring

Item	Completed (yes/no)	Comments or Notes
System Operational on Arrival?	YES	
System Operational on Departure?	YES	
Alarms on Upon Arrival?	NO	
Filters Checked?	YES	
Condensate Checked?	YES	
Oil Level Checked? How Full?	YES	
WD40 Applied to Manifold Enclosure Joints and Bolts? (Quarterly)	NO	
Maintenance Needed?	NO	
Run Time and Electric Reading	Hour Meter: 89.1	Electric Meter: 4.77

Air Sparge Compressor Readings - By Zone

Zone 1 - System, Trailer, and Pre-Receiver Tank Parameters

Trailer Readings During Zone 1 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 1 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Zone 2 - System, Trailer, and Pre-Receiver Tank Parameters

Trailer Readings During Zone 2 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 2 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Zone 3 - System, Trailer, and Pre-Receiver Tank Parameters

Trailer Readings During Zone 3 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101

Zone 3 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101

Zone 4 - System, Trailer, and Pre-Receiver Tank Parameters

Trailer Readings During Zone 4 Operation	AMPs	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (ACFM): FT-101	Temp (°F): TT-101
	4.975	80.5	104.3	263	91.9

Zone 4 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (ACFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.2	65.0	223	86.1	64

Air Sparge Readings - By Leg (L1 through L13)

Observed Flow Rate (ACFM)	FT-201	FT-202	FT-203	FT-204	FT-205	FT-206	FT-207	FT-208
Pressure (psi)	PI-201	PI-202	PI-203	PI-204	PI-205	PI-206	PI-207	PI-208
Corrected Flow Rate (SCFM)	0	0	0	0	0	0	0	0
Observed Flow Rate (ACFM)	FT-209	FT-210	FT-211	FT-212	FT-213	*Corrected Flow Rate =*		
				97	159			
Pressure (psi)	PI-209	PI-210	PI-211	PI-212	PI-213	*Observed Flow Rate* $\cdot \left(\sqrt{\frac{SG \cdot T + 460}{36 \cdot [P + 14.7]}}\right)^{-1}$		
				22.6	24.6			
Corrected Flow Rate (SCFM)	0	0	0	0	0			

Groundwater Levels (ft BTOC)

MW0011 (Z1)	MW0011 (Z3)	MW0012 (Z1)	MW0012 (Z3)	MW0014 (Z3)	MW0015 (Z3)	MW0021 (Z2)	MW0022 (Z2)	MW0023 (Z2)
MW0030 (Z1)	**MW0032 (Z4)**	**MW0033 (Z1)**	**MW0036 (Z4)**	**MW0037 (Z1)**	**MW0040 (Z4)**	Note: >0 indicates water flowing from well upon well cap removal; Z# indicates Zone in operation		

Geosyntec consultants

Notes:

Zone 1 1025 START 2 hr cycles 1-4

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician:	Samuel Graves	Date:	6/30/17	Time:	1000

Manifold Group Temperature Readings (°F)

Zone 1 (Z1):	Zone 2 (Z2):	Zone 3 (Z3):	Zone 4 (Z4):

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS							
	ASW01			ASW02		ASW03		ASW04	
	0				0		0		0
	ASW05			ASW06		ASW07		ASW08	
	0				0		0		0
	ASW09			ASW10		ASW11		ASW12	
	0				0		0		0
	ASW13			ASW14		ASW15		ASW16	
	0				0		0		0
	ASW17			ASW18		ASW19		ASW20	
	0				0		0		0
	ASW21			ASW22		ASW23		ASW24	
	0				0		0		0
	ASW25			ASW26		ASW27		ASW28	
	0				0		0		0
	ASW29			ASW30		ASW31		ASW32	
	0				0		0		0
	ASW33			ASW34		ASW35		ASW36	
	0				0		0		0
	ASW37			ASW38		ASW39		ASW40	
	0				0		0		0
	ASW41			ASW42		ASW43		ASW44	
	0				0		0		0
	ASW45			ASW46		ASW47		ASW48	
	0				0		0		0
	ASW49			ASW50		ASW51		ASW52	
	0				0		0		0
	ASW53			ASW54		ASW55		ASW56	
	0				0		0		0
	ASW57			ASW58		ASW59		ASW60	
	0				0		0		0
	ASW61			ASW62		ASW63		ASW64	
	0				0		0	33	1.5 / 0
32	ASW65	3.5 / 0	34	ASW66	3 / 0	34	ASW67	2.2 / 0	ASW68	33	1.5 / 0
33	ASW69	4 / 0	33	ASW70	3 / 0	33	ASW71	1.6 / 0	ASW72	34	1.5 / 0
33	ASW73	1.8 / 0	33	ASW74	1.0 / 0	34	ASW75	2.4 / 0	ASW76	33	3 / 0
33	ASW77	2.0 / 0	33.5	ASW78	2 / 0	33	ASW79	2.3 / 0	ASW80	33	2.2 / 0

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Samuel Grimes **Date:** 6/30/17 **Time:** 1000

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS
	ASW81	
32	3 / 0	
	ASW82	
33	1 / 0	
	ASW83	
34	1.6 / 0	
	ASW84	
34	2 / 0	
	ASW85	
	0	
	ASW86	
	0	
	ASW87	
	0	
	ASW88	
	0	
	ASW89	
	0	
	ASW90	
	0	
	ASW91	
	0	
	ASW92	
	0	
	ASW93	
	0	
	ASW94	
	0	
	ASW95	
	0	
	ASW96	
	0	
	ASW97	
	0	
	ASW98	
	0	
	ASW99	
	0	
	ASW100	
	0	
	ASW101	
	0	
	ASW102	
	0	
	ASW103	
	0	
	ASW104	
	0	
	ASW105	
	0	
	ASW106	
	0	
	ASW107	
	0	
	ASW108	
	0	
	ASW109	
	0	
	ASW110	
	0	
	ASW111	
	0	
	ASW112	
	0	
	ASW113	
32	1.2 / 0	
	ASW114	
32	2.6 / 0	
	ASW115	
33	1 / 0	
	ASW116	
33	1 / 0	
	ASW117	
5.2	32 / 0	
	ASW118	
32	1.8 / 0	
	ASW119	
32	1 / 0	
	ASW120	
33	2.8 / 0	
	ASW121	
32	1 / 0	
	ASW122	
32	3.5 / 0	
	ASW123	
33	1 / 0	
	ASW124	
32	3 / 0	
	ASW125	
32	1 / 0	
	ASW126	
32	2 / 0	
	ASW127	
32	2 / 0	
	ASW128	
32	3.5 / 0	
	ASW129	
	0	
	ASW130	
	0	
	ASW131	
	0	
	ASW132	
	0	
	ASW133	
	0	
	ASW134	
	0	
	ASW135	
	0	
	ASW136	
	0	
	ASW137	
	0	
	ASW138	
	0	
	ASW139	
	0	
	ASW140	
	0	
	ASW141	
	0	
	ASW142	
	0	
	ASW143	
	0	
	ASW144	
	0	
	ASW145	
	0	
	ASW146	
	0	
	ASW147	
	0	
	ASW148	
	0	
	ASW149	
	0	
	ASW150	
	0	
	ASW151	
	0	
	ASW152	
	0	
	ASW153	
	0	
	ASW154	
	0	
	ASW155	
	0	
	ASW156	
	0	
	ASW157	
	0	
	ASW158	
	0	
	ASW159	
	0	
	ASW160	
	0	
	ASW161	
	0	
	ASW162	
	0	
	ASW163	
	0	
	ASW164	
	0	

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: | Date: 6/30/17 | Time: 1000

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.			
	ASW81	ASW82		ASW83	ASW84
	0		0	0	0
	ASW85	ASW86		ASW87	ASW88
35	2	34	2.2	34	3.4	3.5	2
	0		0	0	0
	ASW89	ASW90		ASW91	ASW92
35	2.2	3.5	5.0	35	3.5	34	2.2
	0		0	0	0
	ASW93	ASW94		ASW95	ASW96
35	1.5	35	1.5	34	1.5	34	2.0
	0		0	0	0
	ASW97	ASW98		ASW99	ASW100
34	2.5	35	2.5	34	1.8	34	2.5
	0		0	0	0
	ASW101	ASW102		ASW103	ASW104
35	3.5	35	3.5	35	2.5	12	
	0		0	0	0
	ASW105	ASW106		ASW107	ASW108
	0		0	0	0
	ASW109	ASW110		ASW111	ASW112
	0		0	0	0
	ASW113	ASW114		ASW115	ASW116
	0		0	0	0
	ASW117	ASW118		ASW119	ASW120
	0		0	0	0
	ASW121	ASW122		ASW123	ASW124
	0		0	0	0
	ASW125	ASW126		ASW127	ASW128
	0		0	0	0
	ASW129	ASW130		ASW131	ASW132
	0		0	0	0
	ASW133	ASW134		ASW135	ASW136
	0		0	0	0
	ASW137	ASW138		ASW139	ASW140
	0		0	0	0
	ASW141	ASW142		ASW143	ASW144
	0		0	0	0
	ASW145	ASW146		ASW147	ASW148
34	3.0	32	3	34	2.5	1.35	3.5
	0		0	0	0
	ASW149	ASW150		ASW151	ASW152
	0		0	0	0
	ASW153	ASW154		ASW155	ASW156
	0		0	0	0
	ASW157	ASW158		ASW159	ASW160
	0		0	0	0
	ASW161	ASW162		ASW163	ASW164
	0		0	0	0

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Samuel Graves | Date: 6/30/17 | Time: 1000

Air Sparge System Readings

MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)			
ASW165		ASW166	ASW167	ASW168
	0	0	0	0
ASW169		ASW170	ASW171	ASW172
	0	0	0	0
ASW173		ASW174	ASW175	ASW176
	0	0	0	0
ASW177		ASW178	ASW179	ASW180
	0	0	0	0
ASW181		ASW182	ASW183	ASW184
	0	0	0	0
ASW185		ASW186	ASW187	ASW188
	0	0	0	0
ASW189		ASW190	ASW191	ASW192
	0	0	0	0
ASW193		ASW194	ASW195	ASW196
	0	0	0	0
ASW197		ASW198	ASW199	ASW200
	0	0	0	0
ASW201		ASW202	ASW203	ASW204
	0	0	0	0
ASW205		ASW206	ASW207	ASW208
	0	0	0	0
ASW209		ASW210	ASW211	ASW212
	0	0	0	0
ASW213		ASW214	ASW215	ASW216
	0	0	0	0
ASW217		ASW218	ASW219	ASW220
	0	0	0	0
ASW221		ASW222	ASW223	ASW224
	0	0	0	0
ASW225		ASW226	ASW227	ASW228
	0	0	0	0
ASW229		ASW230	ASW231	ASW232
	0	0	0	0
ASW233		ASW234	ASW235	ASW236
	0	15 3 0	13 3 0	10 3 0
ASW237		ASW238	ASW239	ASW240
12 3	0	13 3 0	20 3 0	18 3 0
ASW241		ASW242	ASW243	ASW244
15 3	0	15 3 0	15 3 0	15 3 0

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Sam Graves **Date:** 6/30/17 **Time:** 1000

Air Sparge System Readings

MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)
ASW245	
15	3 / 0
ASW246	
14	3 / 0
ASW247	
20	3 / 0
ASW248	
21	3 / 0
ASW249	
21	3 / 0
ASW250	
22	3 / 0
ASW251	
22	3 / 0
ASW252	
21	3 / 0
ASW253	
21	3 / 0
ASW254	
20	3 / 0
ASW255	
20	3 / 0
ASW256	
22	3 / 0
ASW257	
21	3 / 0
ASW258	
21	3 / 0
ASW259	
22	3 / 0
ASW260	
20	3 / 0
ASW261	
22	3 / 0
ASW262	
21	3 / 0
ASW263	
22	3 / 0
ASW264	
22	2.5 / 0
ASW265	
22	2.5 / 0
ASW266	
22.5	2.5 / 0
ASW267	
21	3 / 0
ASW268	
22	2.5 / 0
ASW269	
22	2.5 / 0
ASW270	
22	3 / 0
ASW271	
22	3 / 0
ASW272	
20	3 / 0
ASW273	
23	2.5 / 0
ASW274	
22	3 / 0
ASW275	
22	3 / 0
ASW276	
21	3 / 0
ASW277	
22	2.5 / 0
ASW278	
22	2 / 0
ASW279	
21	3 / 0

Technician Signature:

Reviewer Signature:

JUNE THROUGH AUGUST 2017
AIR SAMPLING, VENTILATION TUNNEL SURVEYS, AND AIR SPARGE SYSTEM OPERATION & MAINTENANCE

FIELD FORMS

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge ~~Well Installation~~ Baseline Air Sampling Date: 6/21/17
Project No.: FR1352E Phase ~~08~~ Task No.: 18
Contractors: ~~Groundwater Protection~~

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: Base Air Sampling walk Tunnel.

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

7:00 DMS Arrives Site, Conducts Tailgate meeting w/ GeoSyntec/FEC, DMS preps for Air Sampling. PID ~~Response~~ DMS calibration Check: Response = 100.1 ppm w/ 100 ppm Calgas. Check 4-gas meter = O2 18% for STD 18% LEL 23% for 23 STD. CO 99 ppm for 96 ppm STD. H_2S = 24 ppm for 24.2 STD.
800 DMS Deploys Summa Cans for ~8 hr. Sampling.
814 Deploy Air 0001 (By Chiller) PID = 0.1 ppm
819 Deploy Air 0002 (By Break area) PID = ~~0.0~~ 0.1 ppm
836 Deploy Air 0003 (By Lox Sphere) PID = 0.3 ppm
Background PID = 0.3 ppm
10:00 Prep to Enter tunnel. DMS, Ben Coppinger, & Mike Dulik Enter tunnel to Inspect & Deploy Air Samplers. Eric Sager stays at West entrance In Case of Emergency.
1025 Deploy Air 0004 (531 ft from W entrance) PID = 0.1 ppm
1048 Deploy Air 005 (East end of tunnel) PID = 0.3 ppm
PID meter did Exceed 0.5 ppm during tunnel walk
1530 DMS & Ben Coppinger walk tunnel to collect Summa cans. NO major cracks of Damage inside tunnel was observed.

Plans/Future Activities

6/21/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: Baseline Air Sampling
Project No.: ~~FR1352E Phase 08~~
Contractors: ~~Groundwater Protection~~

Date: 6/21/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

Two locations were of standing GW was noted. See Video for locations and intervals.
17:00 Tunnel walk complete; secure tunnel, contact HVAC & Pad ops.
17:15 Depart S.M.

Plans/Future Activities

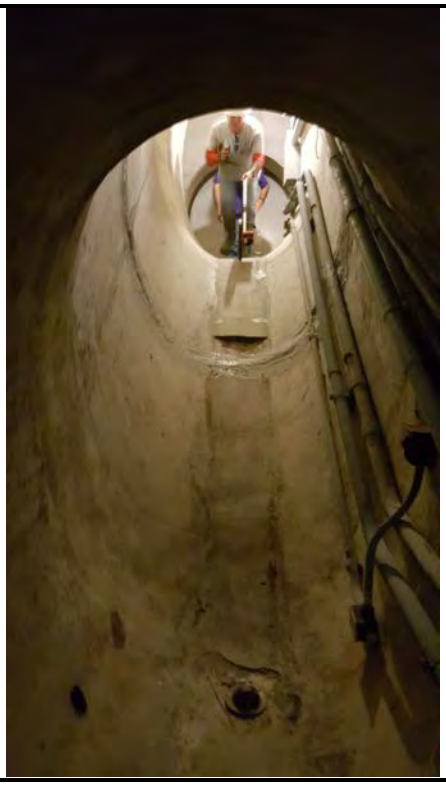
6/21/17
Signature/Date

GEOSYNTEC CONSULTANTS
Photographic Record

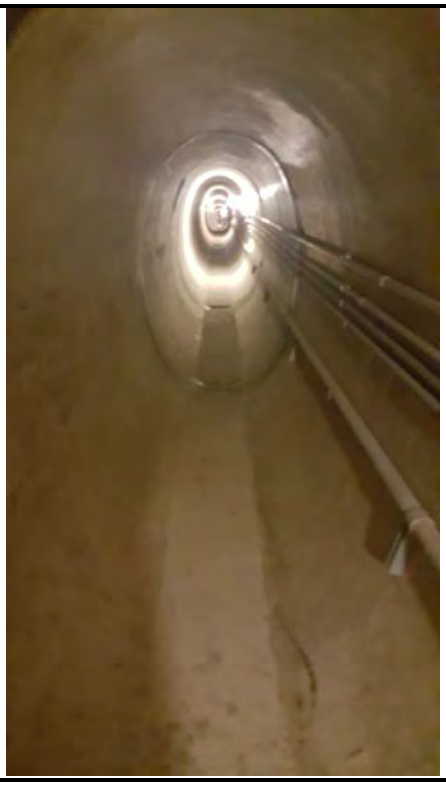
Geosyntec consultants

Client: NASA Kennedy Space Center | **Project Number: FR1352E**

Site Name: Launch Complex 39B | **Site Location: Merritt Island, Florida**

#1 **Date: 06/21/2017** **Direction: NA** **Comments: View of the start of the ventilation tunnel (looking upwards).**	
#2 **Date: 06/21/2017** **Direction: NA** **Comments: View of the ventilation tunnel, facing away from the entrance.**	

GEOSYNTEC CONSULTANTS Photographic Record	Geosyntec consultants
Client: NASA Kennedy Space Center	**Project Number: FR1352E**
Site Name: Launch Complex 39B	**Site Location: Merritt Island, Florida**

#3 **Date: 06/21/2017** **Direction: NA** **Comments: Deployment of summa canister within the ventilation tunnel to collect indoor air sample AIR0004 near the midpoint of the air sparge well network.**	
#4 **Date: 06/21/201** **Direction: NA** **Comments: View of the ventilation tunnel, facing towards the exit.**	

Geosyntec consultants

DAILY FIELD REPORT

Project: LC39B Air Sparge ~~Well Installation~~ System O&M
Project No.: FR1352E ~~Phase 08~~
Contractors: ~~Groundwater Protection~~
Date: 7/6/17
Task No.: 1

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: O&M + air sampling

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

0700 - Arrive on site & check-in
0710 - Conduct H&S meeting w/ Zach Munger (ZM) & Sam Graves (SG)
0730 - Turn on Zone 4. Begin Summa deployment
0743 - Deploy Air0001 by the Pad
0746 - Deploy Air0002 by the smoke breaks area
0803 - PID cal'd (100.2 for 100 ppm). S/N: T-111707
0812 - Cal check on 4-gas ⇒ reads ↳

	O_2	LEL	CO	H_2S
	19%	23%	46 ppm	24.2 ppm
Ben Gippetti (BC) on site. shutdown:	18%	25%	100 ppm	25 ppm

0815 - Deploy Air0003. Approx 26.5 ft west of transformer 102A
PID = 0.5 ppm in breathing space
0830 - Inform Danny in HVAC control of tunnel access
0840 - Begin deployment activities
0920 - Complete tunnel survey & deployment. PID maxed out @ 0.3 ppm
Air0004 deployed @ 0856
Air0005 deployed @ 0907
0930 - BC off site, begin O&M. Zone 4 ⇒ 1. Also add ASW intakes to flow meters & ~~stack~~ magnets to manifolds
1100 - ZM off site to grab lunch

Plans/Future Activities

1205 - ASW153 & 154 pulled back from ~7.5 ~~ft~~ cm each
1325 - While opening ~~MW0011~~ MW0012 during Z3 operation, significant back pressure observed. Unable to close MW back up.
1630 - Inform ISC we are entering tunnel to collect Summas & water samples. ZM post-holed sign posts & collected Summas while MB & SG balanced system

7/6/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Project: ~~EK-TAP~~ mb LC398
Project No.: ~~TR0356E~~ FB1352E
Contractors:

Date: 7/6/17
Task No.: ~~05~~

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: O&M and air sampling

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

1640 - enter tunnel to collect water & air samples.
1645. PM leader calls to check on us. Inform him we are finishing up.
mb ~~HSP~~ He says not to wash & slip overlays under door if after 5 pm
1715 - Leave site. Put overlays under door as instructed

☆ See Sample Log for sample & air monitoring details

MB

Plans/Future Activities

7/6/17
Signature/Date

Geosyntec consultants

SAMPLE LOG

DAILY FIELD REPORT

Page 1 of 1

Project: EK-TAP FR1352E
Project No.: TR0356E LC39B
Contractors:

Date: 6 7/6/17
Task No.: 05

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

PID Readings:

Location	Time	Reading
~~10~~ Zone 4 Man.	1000	0.2 ppm
Zone 3 Man. (Z3-L3c)	1215	0.0 ppm
Zone 2 Man	1410	0.3 ppm
Zone 1 Man.	1540	0.1 ppm
Zone 1B Man.	1620	0.1 ppm

Air Locations: Air 0001 - Zone 3 area
Air 0002 - smoking break area
Air 0003 - Hot Spot 2 near transformers
Air 0004 - "middle" of ventilation ~~exhaust~~ tunnel (MB)
Air 0005 - east end of ventilation tunnel

Water Samples: Sample 0001 - 678' from west entrance
Sample 0002 - 890' from west entrance

(MB)

Plans/Future Activities

7/6/17
Signature/Date

Daily Field Form

7/7/17

Project: LC39B - ER1352E

Work: System O&M

0745- Arrive on site. Meet Eric Sager (ES) & Sam Graves (SG). Check in w/ pad leader

0800- Mike Deliz with NASA on site. ES meets w/ him and conducts a site walks. Mike Burcham (MB) & SG post-hole & install GW signage

0800- Josue w/ Geosyntec on site & leaves site w/ water samples so they can be shipped

0815 - Dinh Vo w/ NASA on site. Meets w/ ES & Mike Deliz

0930 - Josue returns to site, Deploys manifold layout signs & checks them for correctness

1130 - ES & SG off site after Discussing to do items, Done w/ site work for day. Will purchase some known supplies

1145 - Talk to Jim Frydl w/ MAEE about system memory, No USB drive installed - need to procure one.

1230 - off site

MB

7/7/17

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B AS System O&M
Project No.: FR1352E 14 (MB)
Contractors: NA

Date: 7/12/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: System O&M

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

System down due to High Humidity Alarm

700 Arrive Tville office, Load Equipment.
715 Depart for Site.
815 → Arrive Site. FRCC, onsite. DMS Conducts tailgate meeting. Ben Copperger & Olivia Cain onsite.
840 Ben Copperger departs site. DMS & Olivia Cain. (OC) operate System through a 30 minute cycles to Try to troubleshoot High Humidity Alarm. Alarm Seems to Activate When System transitions from one Zone to another.
1200 Break for Lunch
1245 Return From Lunch. Adjust Flow Controller From Tank TO System header So that PSI Drops from ~60 psi to 50 psi. * System operates when Pressure @ PT103 is at ~50.0 PSI. As Pressure @ PT103 is adjusted Higher - High Humidity Alarm is Triggered.
14:00 OC Departs Site. DMS Continues to Check system Flows w/ PT103 adjusted to ~50.0 PSI. Flows at Trailer (AS Legs) and at manifold & ASVS operating within acceptable Range

Plans/Future Activities

See OC's Notes attached.

7/12/17
Signature/Date

DMS

LC39B Notes

07/12/2017

11:30 ~ * cycled through 1 & 2
↳ shut off because of humidity for 3 (100% for >7s) ← may be off
↳ restarted system twice (ALARM RESET)
↳ before 3rd time, waited for a few minutes

12:24 pm * zone one turned on
→ ~ 3000 scfm during startup (~~FTO~~ FT101)
→ leveled off around 400 scfm
* humidity lowers to ~ 70-80%

12:54 pm * switch to zone 2
↳ FT101: peak @ ~2000 ← cfm in FT101, 99%
↳ ~~leveled off~~ stabilized ~450 scfm
* ~~adje~~ adjusted valve to lower pressure through PT103
↳ seems to have decreased RH to 70% (compared to 74%)
↳ changed P to ~50 psi (47.8 psi @ 1:21 pm)

Dave Sizemore's Cell #
321 261 7629

1:24 pm * ~~as~~ as system switched, RH=68%
* switch to zone 3 ← FT101
↳ peak CFM: 3700, 95% humidity
↳ leveled off ~400 scfm (380-390 cfm) ← first 15 min
↳ lowest observed ~~pressure~~ RH: 69%

1:54 pm * switch to zone 1
↳ FT101 max: ~3600 cfm
↳ RH max: 92%

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge ~~Well Installation~~ System O&M
Project No.: FR1352E Phase 08 14 (MB)
Contractors: ~~Groundwater Protection~~

Date: 7/13/17
Task No.: DMS

Work Performed

Well Installation:		Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:	System O&M	Sampling Drums:	

Observations/Issues of Concern

700 DMS arrives office Prep Equipment & Paperwork.
730 Ben Coppenger & Jose Rivera arrive office & load Equipment. Depart for S.T.P.
830 DMS departs for S.T.P.
900 DMS arrive Site & Set up for System O&M & Data Entry on ~~Electric~~ DMS Ipad.
BC & JR Setting air Samplers & Prep to walk Tunnel.
1000 BC & JR Complete Tunnel Survey.
1120 Begin Collecting Manifold Reading & System Reading. DMS Fixes ~~wells~~ ons Sewing Wells.
1230 DMS Begin entering data on Ipad.
~~1600~~ on 1600 BC & JR Return to tunnel to Remove Sump Cans.
16:30 All personnel Depart S.T.P.

Plans/Future Activities

7/13/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: 2C39B Arr-Tunnel sampling
Project No.: FR1352E
Contractors: none

Date: 7-13-17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: Arr Tunnel Sampling
Water Tunnel Sampling

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

- 0825 - Ben Coppenger + Josue Rivera arrive @ Site + Check in w/ Pad Leader office, then begin Summa Can deployment
- Arr0003 - FC# 01155, Can# 01156, IVC -30, deployed @ 0830
- Arr0001 - FC# 01154, Can# 01195, IVC -30, deployed @ 0833
- Arr0002 - FC# 01203, Can# 01076, IVC -30, deployed @ 0838
- Arr0004 - FC# 01197, Can# 01229, IVC -30, deployed @ 0955
- Arr0005 - FC# 01184, Can# 01207, IVC -30, deployed @ 1002

Arr Sample Collection

- Arr0005 collected @ 1610
- Arr0004 @ 1615
- Arr0003 @ 1630
- Arr0001 @ 1632
- Arr0002 @ 1635

Tunnel Water Sample Collection

- TU0723 @ 1535 @ [illegible] into Tunnel
- TU0906 @ 1540 @ 906' into Tunnel

Plans/Future Activities

Note: 0.3 ppm highest observed PID reading inside Tunnel @ 906 ft puddle, a slight sheen observed on water surface, light bubbling also observed

Note: PID readings for Z1, Z2, Z3, Z4 manifold during Ops
Z1: 0.1/0.1 Z2: 0.0/0.0 Z3: 0.1/0.1 Z4: 0.1/0.0
- readings taken pre + post manifold leg measurements recorded

7-13-17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC39B Air Sparge ~~Well Installation~~ System O&M
Project No.: FR1352E Phase 08 14 (MB)
Contractors: ~~Groundwater Protection~~

Date: 7/14/17
Task No.:

Work Performed

Well Installation:		Sampling Soil:	
Soil Borings:		Sampling SW/Sediment:	
DPT:		Sampling Monitor Wells:	
Well Inventory:		Sampling Hazardous Waste:	
Other:	System Repairs	Sampling Drums:	

Observations/Issues of Concern

800 Depart Tiville office & Procure Cement & Pipe Fittings for Filling Blowouts & capping Spewing wells.
930 Onsite Arrives Site & fills large Blowout on South side of escape tunnel w/ 200 Lbs of Portland Cement. Recap wells that were Spewing through ~~Capped~~ well Cap & manhole lids.
1300 Due to ponding & Flooding, Wells & Blowouts Cannot be properly Capped & Filled w/ Grout. Re-program System so all Zones ~~operate~~ are set not to operate (set Run times to Zero).
1330 Depart Site.
1400 Return to Tiville office.

Plans/Future Activities

7/14/17
Signature/Date

Geosyntec consultants

DAILY FIELD REPORT

Page 1 of 1

Project: LC393
Project No.: FR1352 E
Contractors:

Date: 7/24/17
Task No.:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other: System Restart & Balance System

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

800 Depart MLP For LC393.
815 DMS & WPD arrive site & Check manifolds. All manifold valves are open.
855 Restart System, Starting to Zone 1. Balance flows in Zone 1 (Adjust Flows to About 25cfm) 30psi.
11:00 Turn off flow to Zone 1 & Turn on flow to Zone 2.
12:00 Shut down Zone 2, Start Zone 3.
13:46 Shut down Zone 3, Start Zone 4.
Checked blowout & well Repairs in each Zone as System was operating. No Significant mounding, or blowouts remaining. Repairs to former blowouts seem to have Corrected to problem. Will leave System on until Thursday and assess area at that time.
15:05 Clean AS trailer, Final Check on ponding & Blowouts
16:20 Depart Site.

Plans/Future Activities

Signature/Date

Geosyntec consultants

Sample Log
~~DAILY FIELD REPORT~~

Page 1 of 1

Project: LC39B
Project No.: FR1357E
Contractors:

Date: 7/27/17
Task No.: 18

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

Sample ID	Time Deployed	Time Collected	PID reading	Comment
Air –				
Air 0001	755	1659	< 1 ppm	
Air 0002	756	1600	< 1 ppm	
Air 0003	759	1610	< 1 ppm	
Air 0004	742	1545	< 1 ppm	
Air 0005	745	1539	< 1 ppm	
Water –				
39B-0005		1630		723' E of entry point
39B-0004		~~1630~~ 1635		905' E of entry point

Plans/Future Activities

7/27/17
Signature/Date

Geosyntec consultants

Sample Log

~~DAILY FIELD REPORT~~

Page 1 of 1

Project: LC39B
Project No.: FR1352R
Date: 8/3/17
Task No.: 18
Contractors:

Work Performed

Well Installation:
Soil Borings:
DPT:
Well Inventory:
Other:

Sampling Soil:
Sampling SW/Sediment:
Sampling Monitor Wells:
Sampling Hazardous Waste:
Sampling Drums:

Observations/Issues of Concern

Sample ID	Time Deployed	Time Collected	PID Reading	Comment
Air –				
Air 0001	908	1615	<1	
Air 0002	910	1619	<1	
Air 0003	913	1617	<1	
Air 0004	850	1600	<1	
Air 0005	900	1605	<1	
Water				
39B-0005		915		723' E of entry point
39B-0004		920		905 E of entry point.

Plans/Future Activities

8/3/17
Signature/Date

APPENDIX C
MONITORING WELL AND AIR SPARGE WELL CONSTRUCTION LOGS
(FURNISHED ON CD)

NOVEMBER 2016
MONITORING WELL INSTALLATION

WELL CONSTRUCTION LOGS

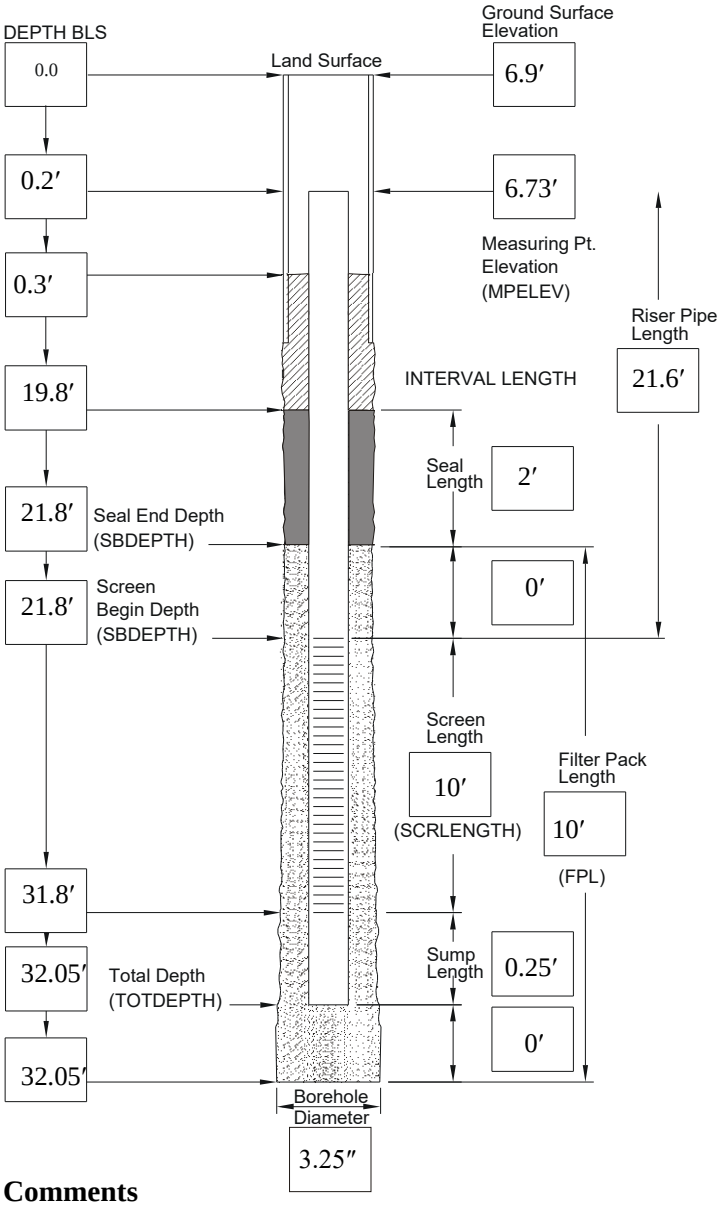
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0010

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature: William Garde

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/
Casing Installation Date: 11/14/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
15 – 25 feet below land surface very hard drilling

Well Completion
Guard Posts (Y / (N)) Date: 11/14/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/14/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: 5 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap ((Y) N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / (N))
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): 5 gallons
Recovered (Gal): 22 gallons
Reviewed
By: Mike Burton Date: 12/22/16

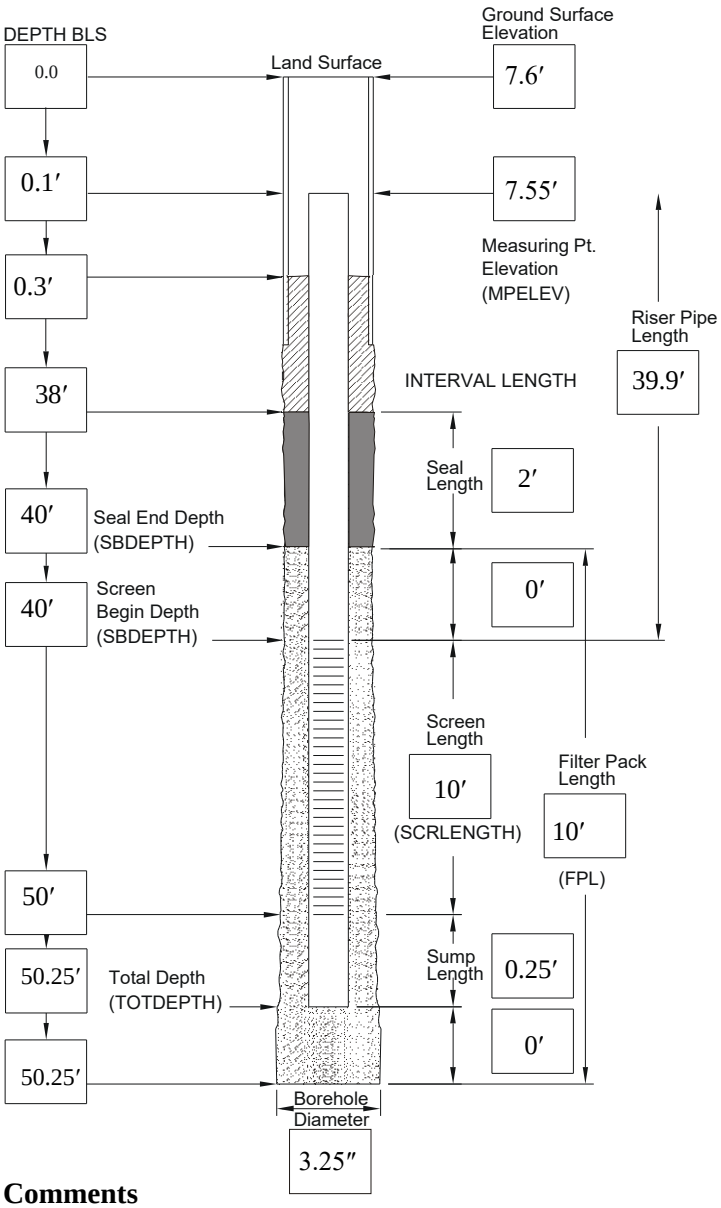
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0011

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature: William Garde

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/
Casing Installation Date: 11/14/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / (N)) Date: 11/14/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/14/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: 5 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap ((Y) N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / (N))
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): 10 gallons
Recovered (Gal): 23 gallons
Reviewed
By: Mike Brunt Date: 12/22/16

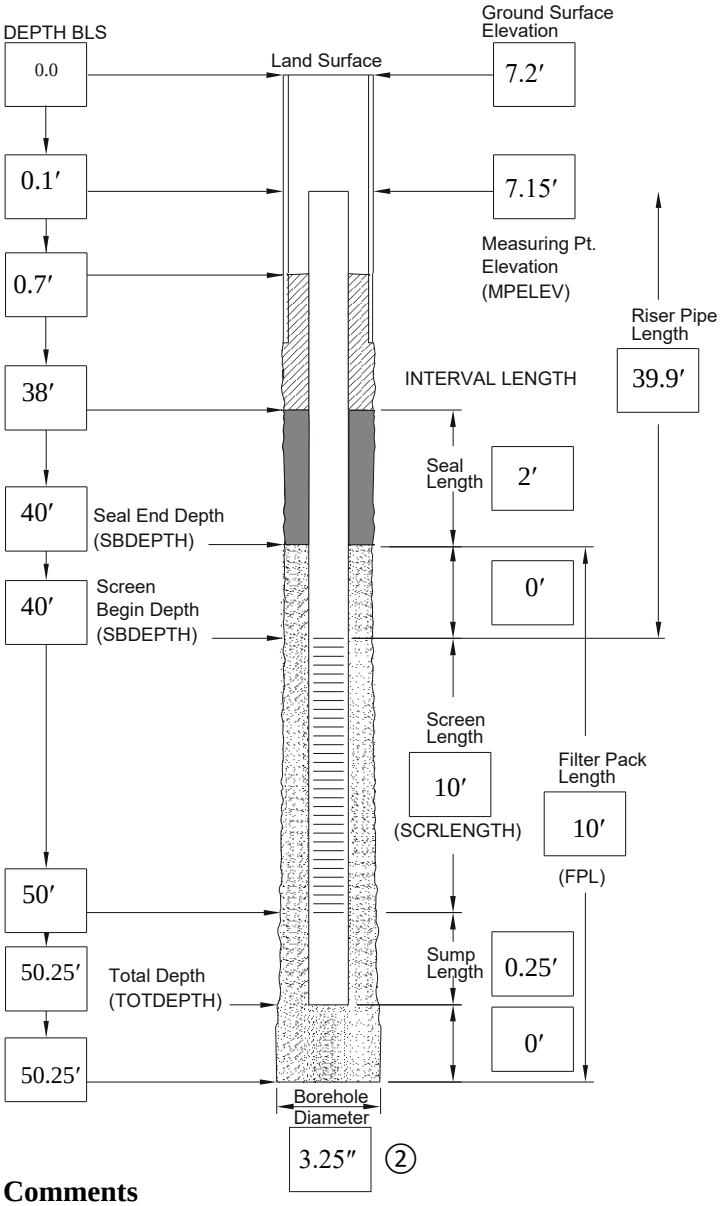
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0012

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature: William Garde

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/15/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevation measure in feet NAVD 88
②Flight auger to 25 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / (N)) Date: 11/15/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/15/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 18 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap ((Y) N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / (N))
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 18 gallons
Recovered (Gal): ~ 22.5 gallons
Reviewed
By: Mike Burton Date: 12/22/16

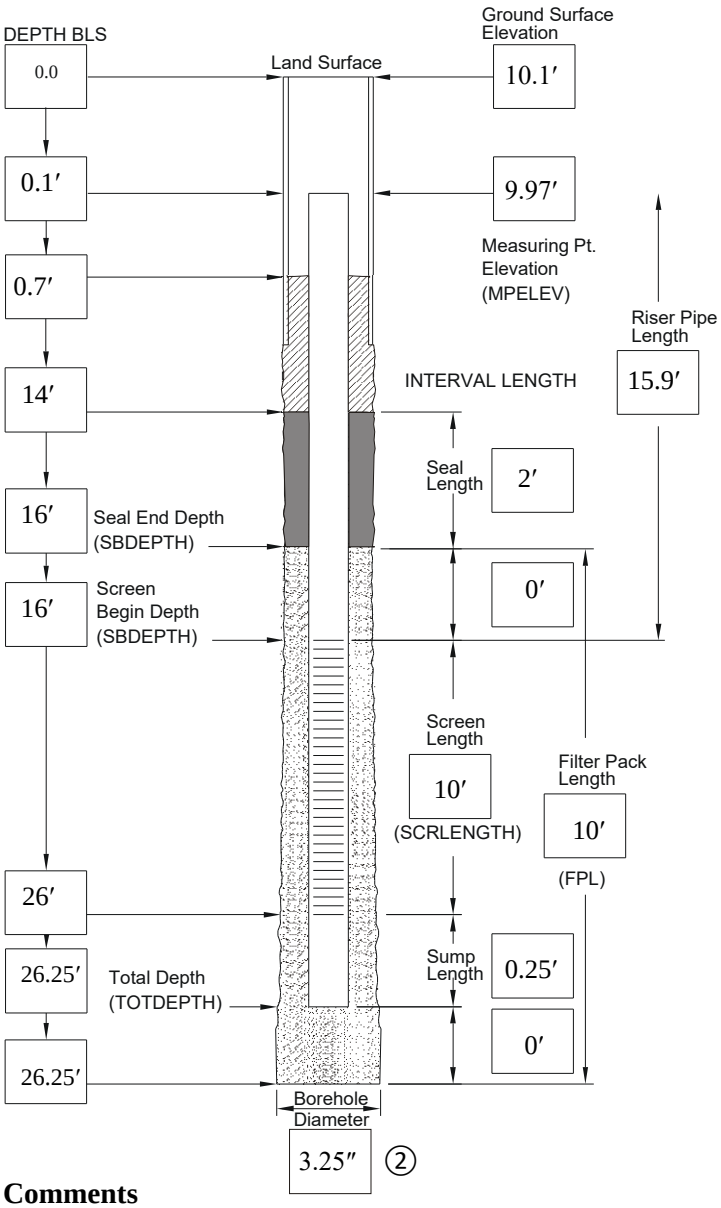
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0013

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/15/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 20 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / N) Date: 11/15/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/15/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 2.5 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 2.5 gallons
Recovered (Gal): ~ 15 gallons
Reviewed
By: Date: 12/22/16

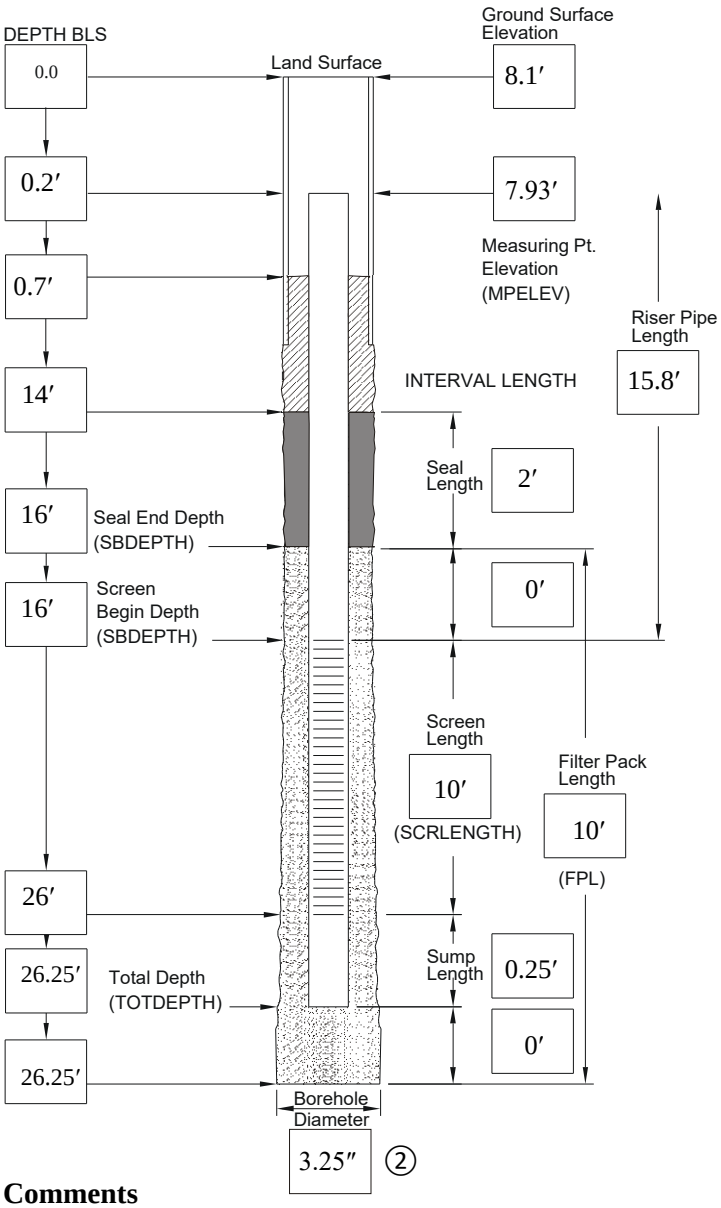
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0014

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/15/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 20 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / N) Date: 11/15/2016
Surface Pad Size: 4 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/15/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 2.5 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 2.5 gallons
Recovered (Gal): ~ 15 gallons
Reviewed
By: Date: 12/22/16

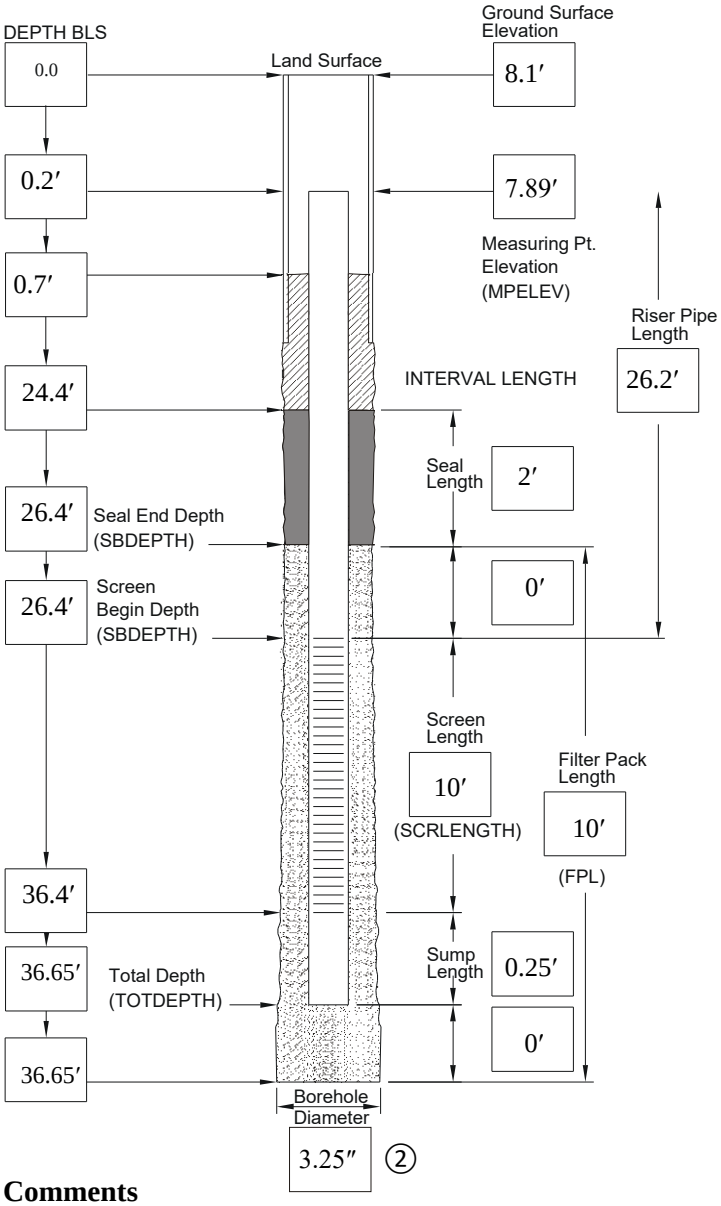
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0015

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/15/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 20 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / (N)) Date: 11/15/2016
Surface Pad Size: 4 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/15/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 12.5 gallons
Filter Pack
Type: 20/30 sand pre-pack (1/2 bag 20/30 sand)
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap ((Y) N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / (N))
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 12.5 gallons
Recovered (Gal): ~ 20 gallons
Reviewed
By: Date: 12/22/16

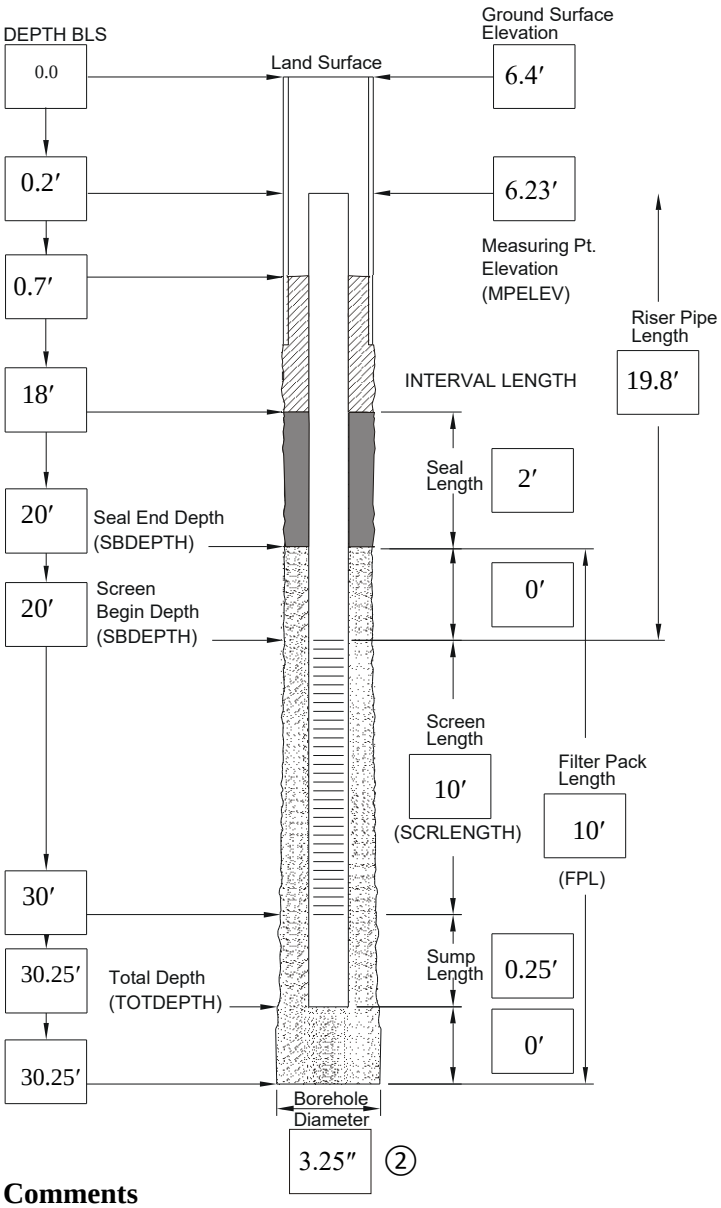
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0016

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature: [signature]

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/16/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 20 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/16/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 7 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 7 gallons
Recovered (Gal): ~ 17.5 gallons
Reviewed
By: [signature] Date: 12/22/16

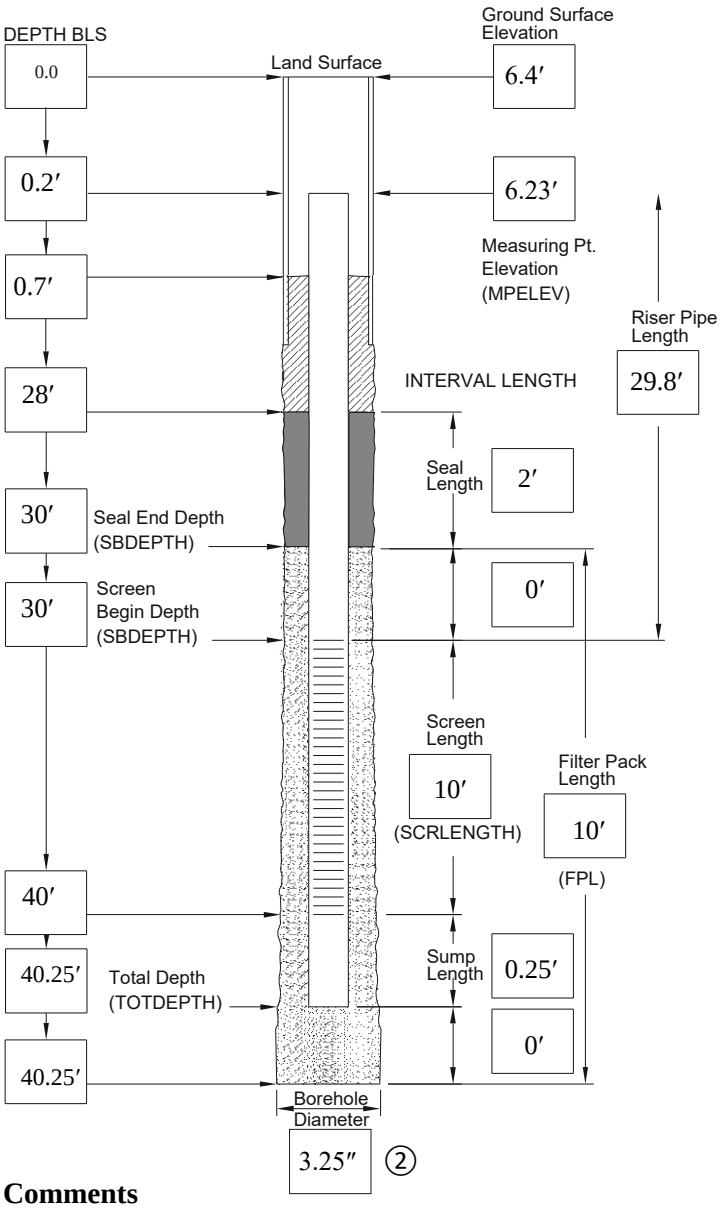
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0017

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/16/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 20 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/16/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 10 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 10 gallons
Recovered (Gal): ~ 15 gallons
Reviewed
By: Date: 12/22/16

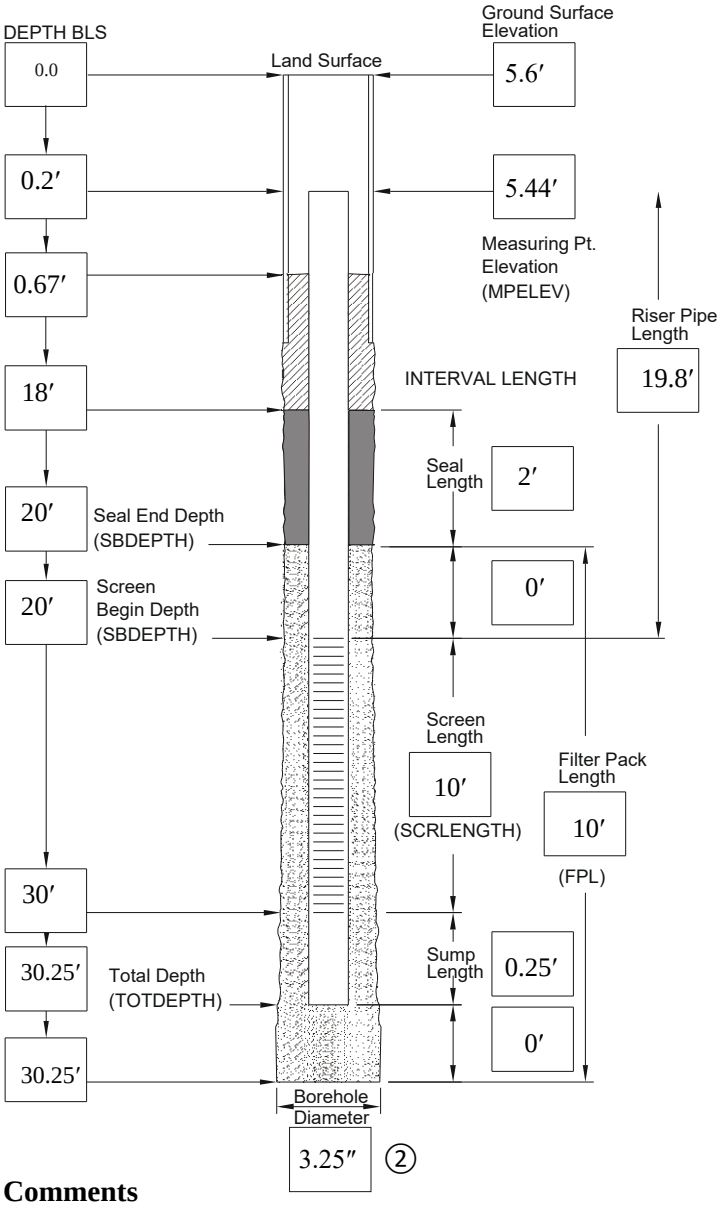
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0018

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/16/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 20 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT tubing.

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/16/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 5 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 5 gallons
Recovered (Gal): ~ 12.5 gallons
Reviewed
By: Date: 12/22/16

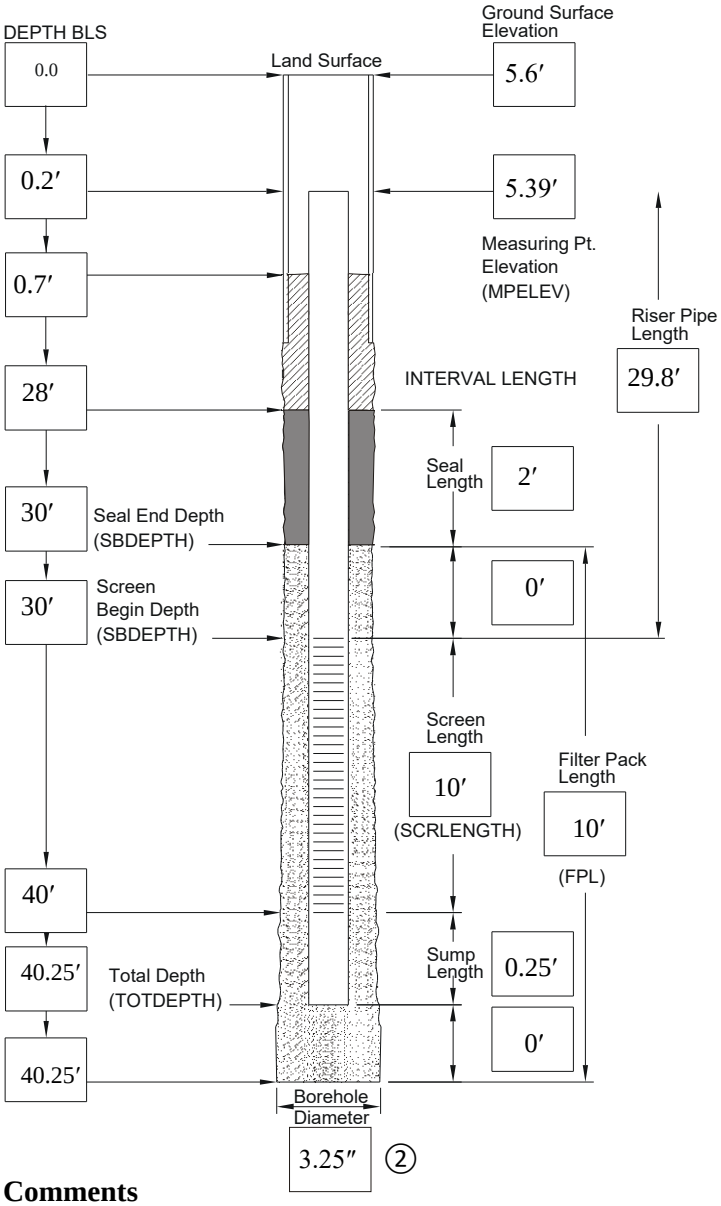
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0019

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature: William Garde

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/16/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 20 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/16/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 12 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 12 gallons
Recovered (Gal): ~ 15 gallons
Reviewed
By: Mike Burton Date: 12/22/16

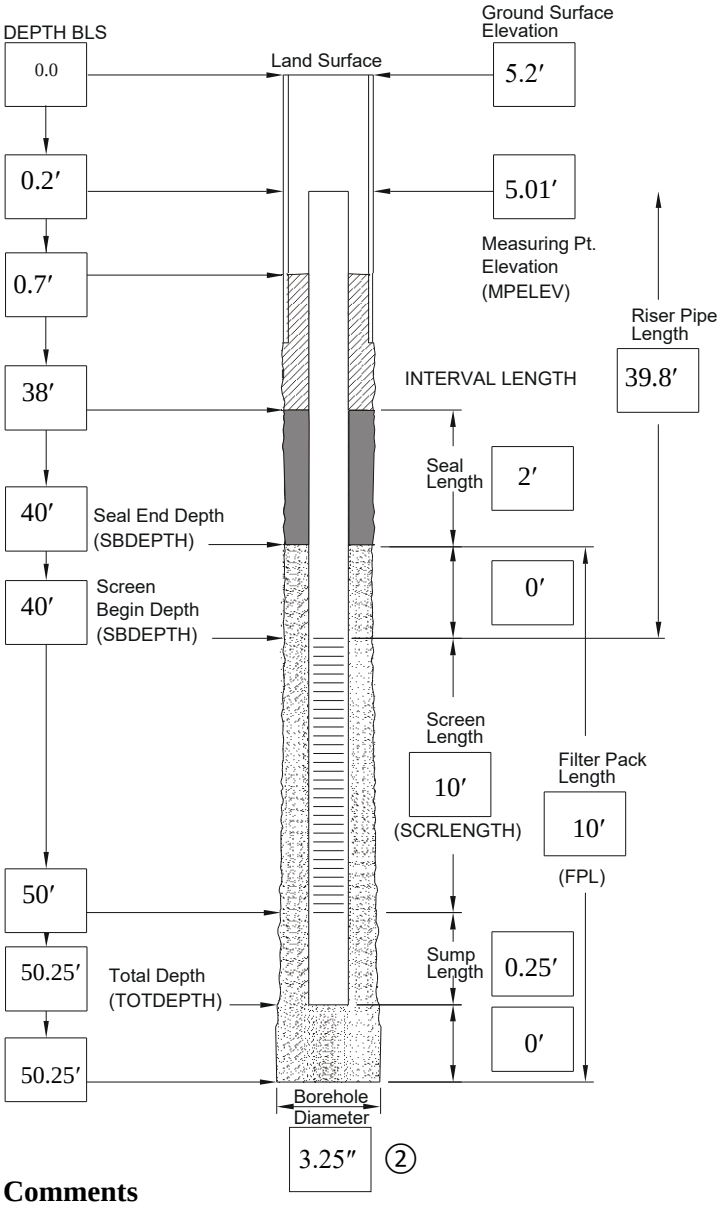
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0020

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 20 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT tubing.

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 20 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 20 gallons
Recovered (Gal): ~ 20 gallons
Reviewed
By: Date: 12/22/16

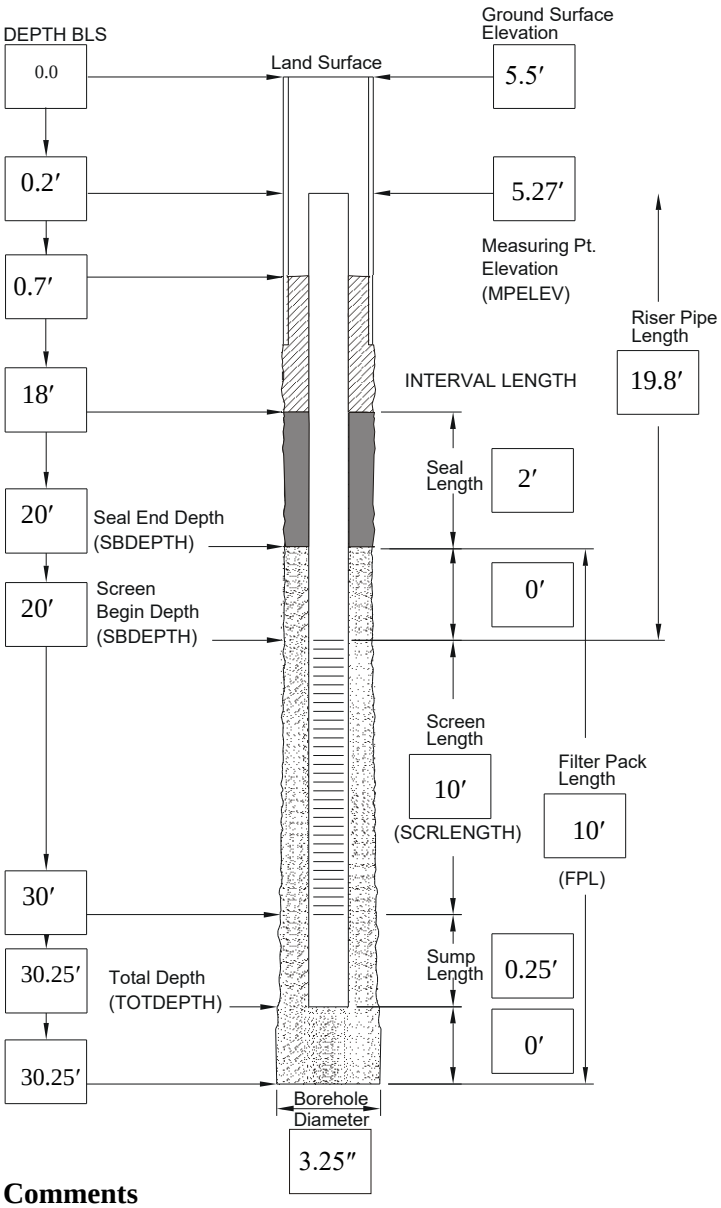
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0021

Drilling Company: GPI
Drillers: Bryan Nazworth
Geologist/Engineer: J. Bartlett
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 6 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 15 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 15 gallons
Recovered (Gal): ~ 24 gallons
Reviewed
By: Date: 12/22/16

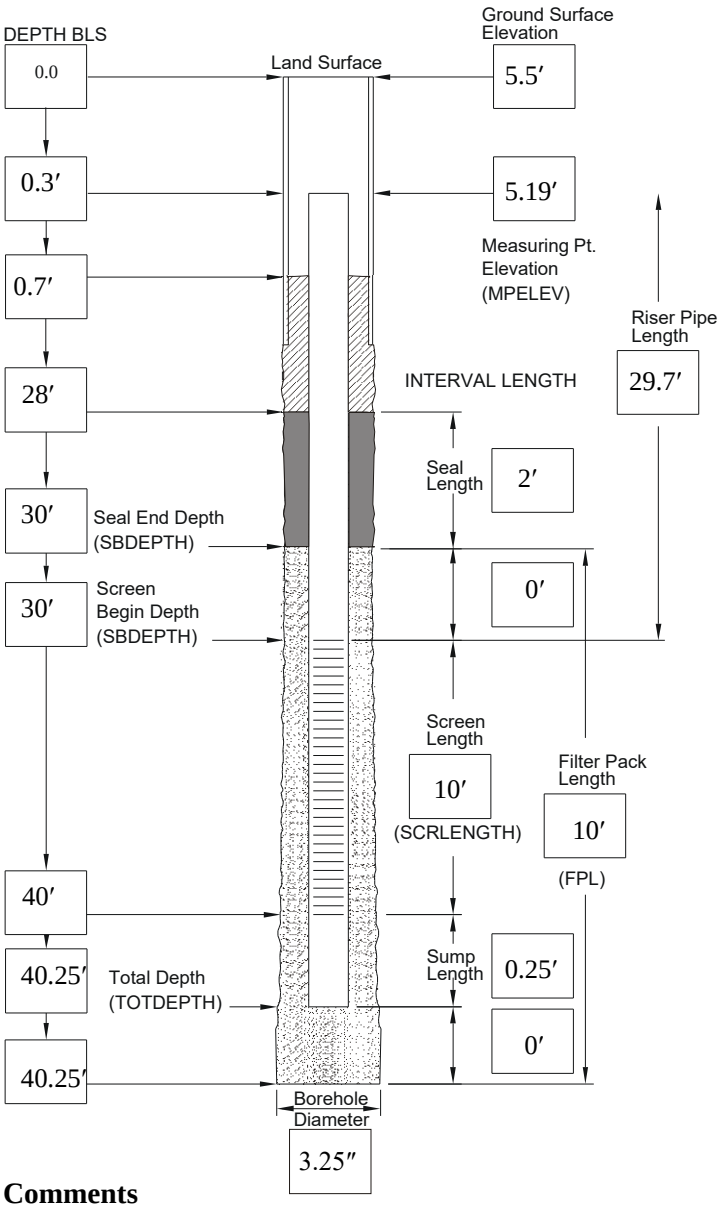
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0022

Drilling Company: GPI
Drillers: Bryan Nazworth
Geologist/Engineer: J. Bartlett
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 6 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 20 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 20 gallons
Recovered (Gal): ~ 18 gallons
Reviewed
By: Date: 12/22/16

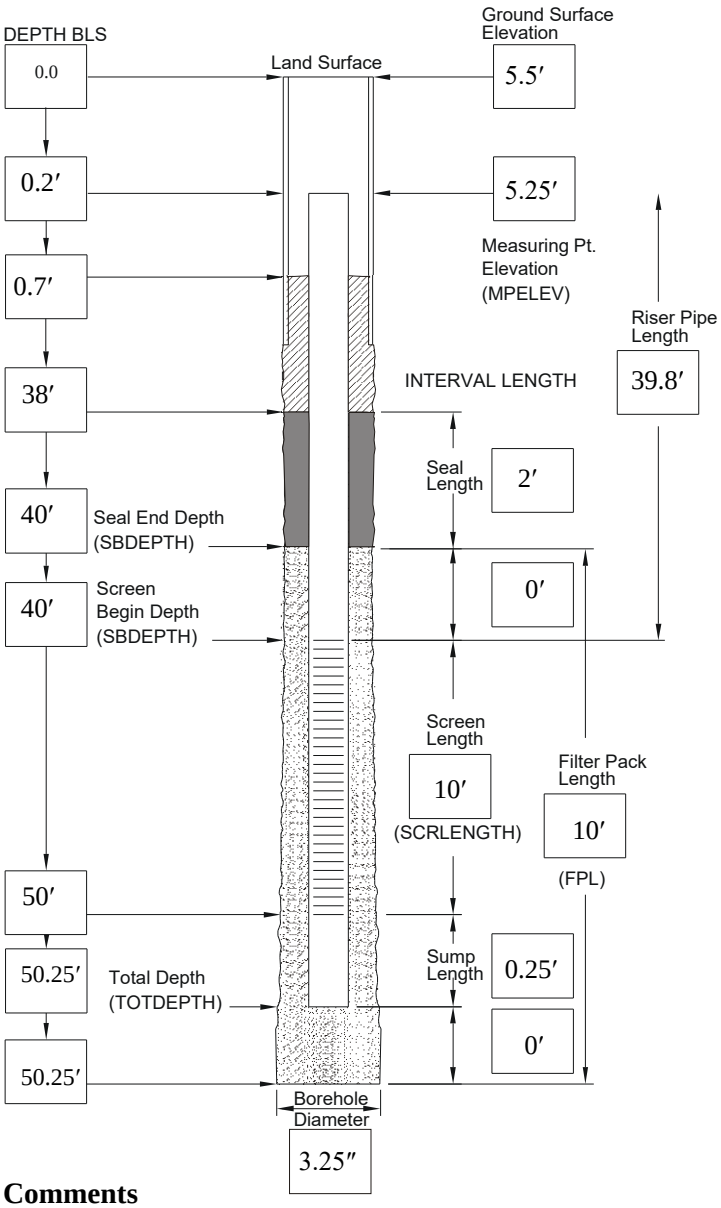
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0023

Drilling Company: GPI
Drillers: Bryan Nazworth; Gamma Riviera
Geologist/Engineer: J. Bartlett
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/16/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 6 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/16/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 20 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 20 gallons
Recovered (Gal): ~ 13 gallons
Reviewed
By: Date: 12/22/16

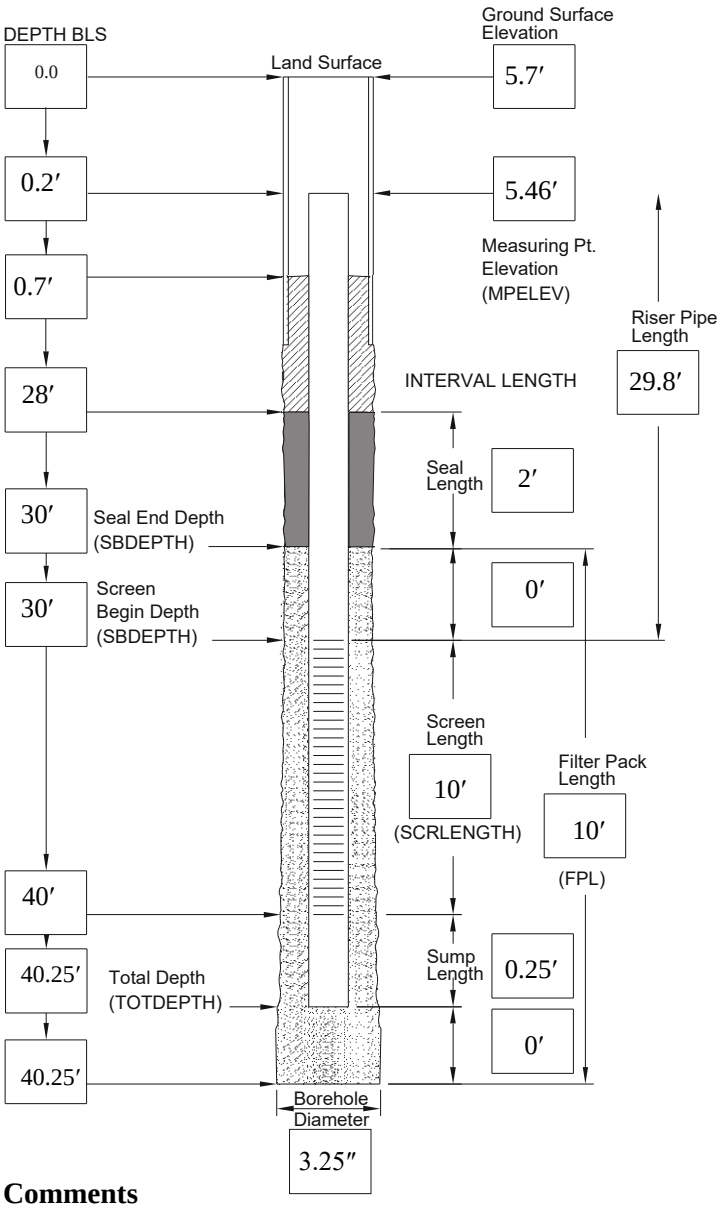
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0024

Drilling Company: GPI
Drillers: Bryan Nazworth
Geologist/Engineer: J. Bartlett
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 20 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 20 gallons
Recovered (Gal): ~ 25 gallons
Reviewed
By: Date: 12/22/16

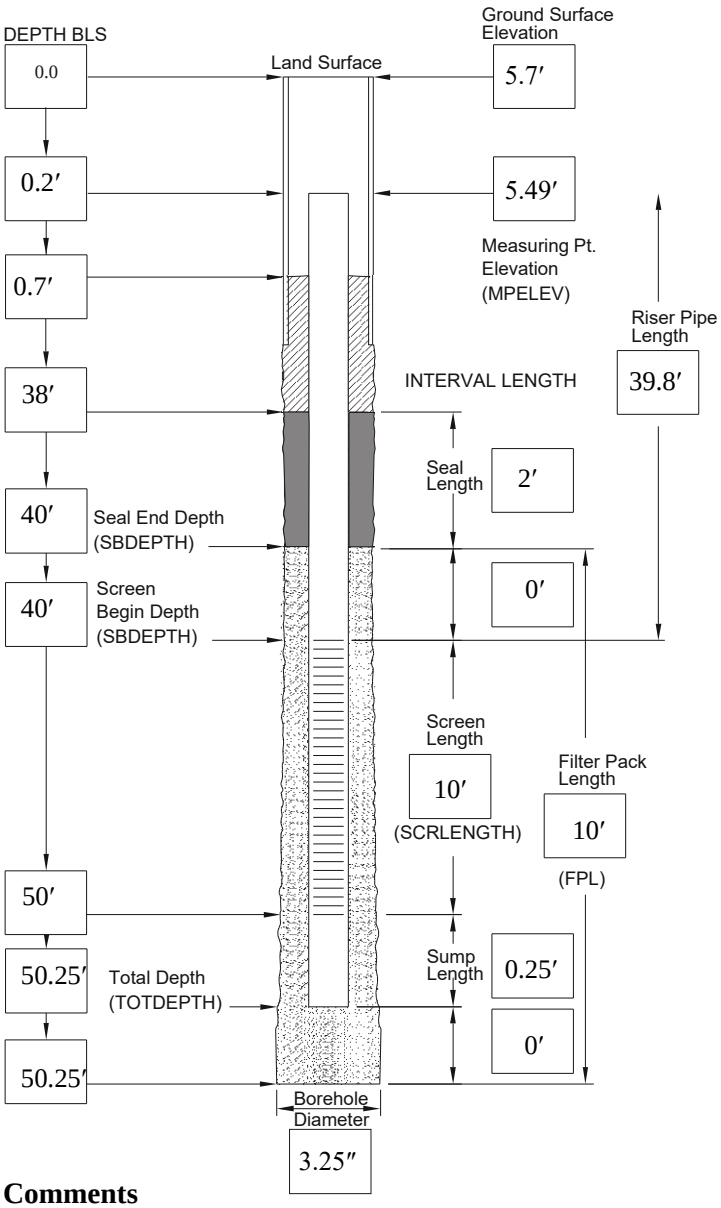
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0025

Drilling Company: GPI
Drillers: Brian Nazworth
Geologist/Engineer: J. Bartlett
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 25 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 25 gallons
Recovered (Gal): ~ 26 gallons
Reviewed
By: Date: 12/22/16

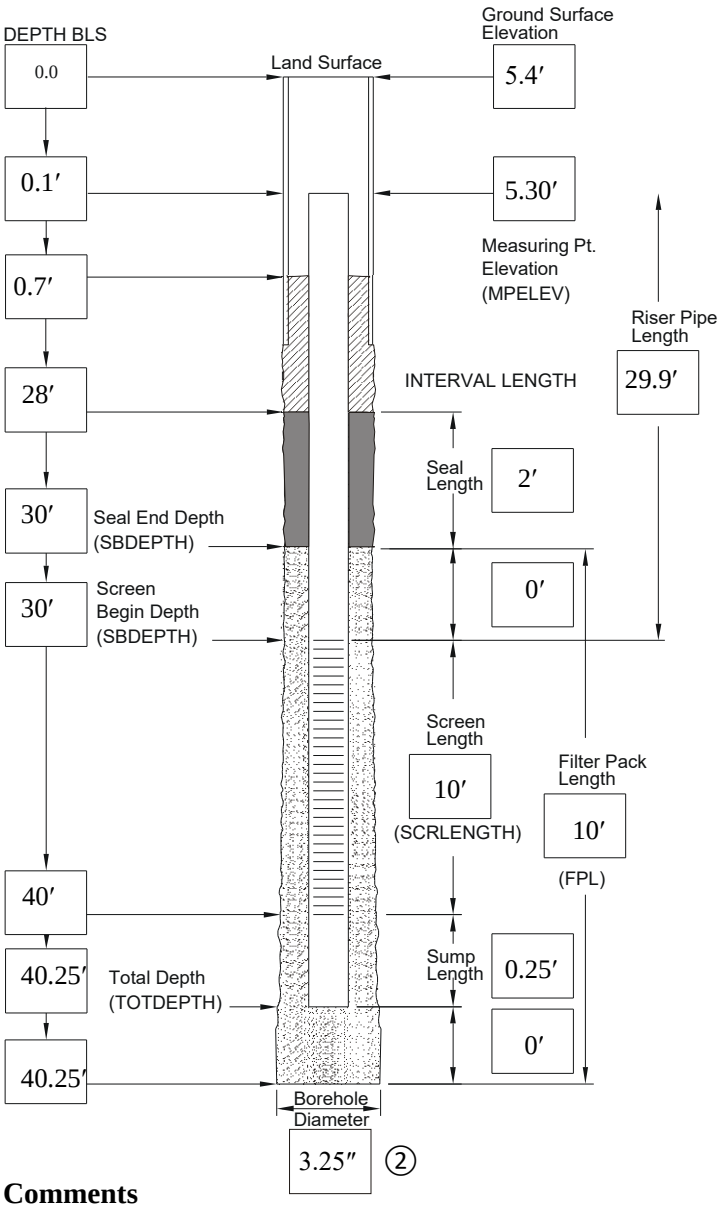
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0026

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 15 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / (N)) Date: 11/18/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 20 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap ((Y) N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / (N))
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 20 gallons
Recovered (Gal): ~ 12 gallons
Reviewed
By: Date: 12/22/16

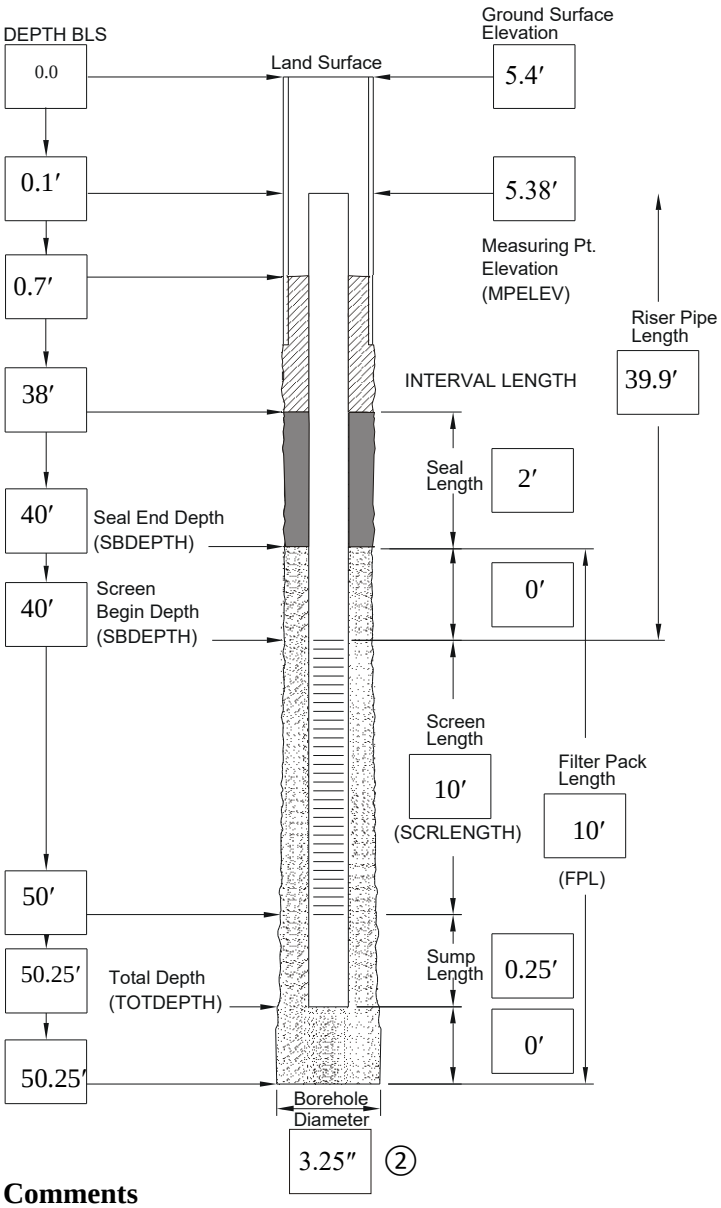
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0027

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 15 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 20 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 20 gallons
Recovered (Gal): ~ 12 gallons
Reviewed
By: Date: 12/22/16

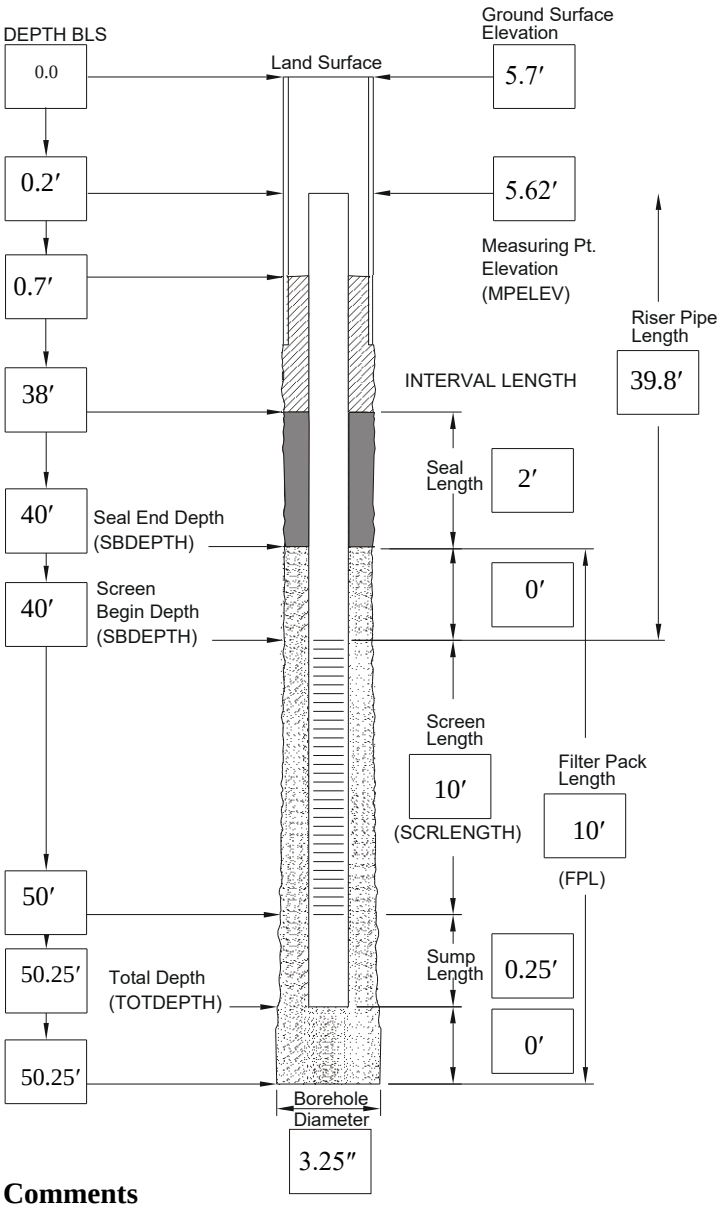
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0028

Drilling Company: GPI
Drillers: Bryan Nazworth
Geologist/Engineer: J. Bartlett
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 25 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 25 gallons
Recovered (Gal): ~ 6 gallons
Reviewed
By: Date: 12/22/16

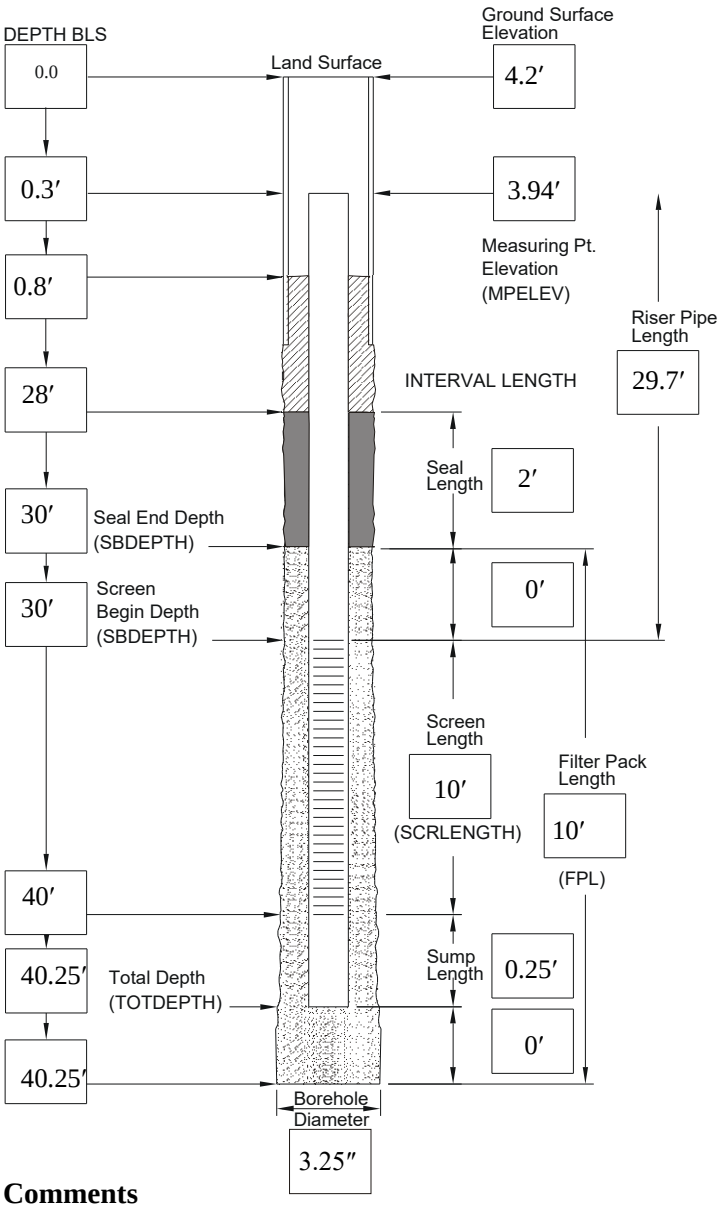
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0029

Drilling Company: GPI
Drillers: Brian N.; Gama R.
Geologist/Engineer: M. Burcham
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/21/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
Water introduced into rods during drilling to assist in keeping seal from bridging. Well grouted before development.

Well Completion
Guard Posts (Y / (N)) Date: 11/21/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/21/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 5 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap ((Y) N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / (N))
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 20 gallons
Recovered (Gal): ~ 9 gallons
Reviewed
By: Date: 12/22/16

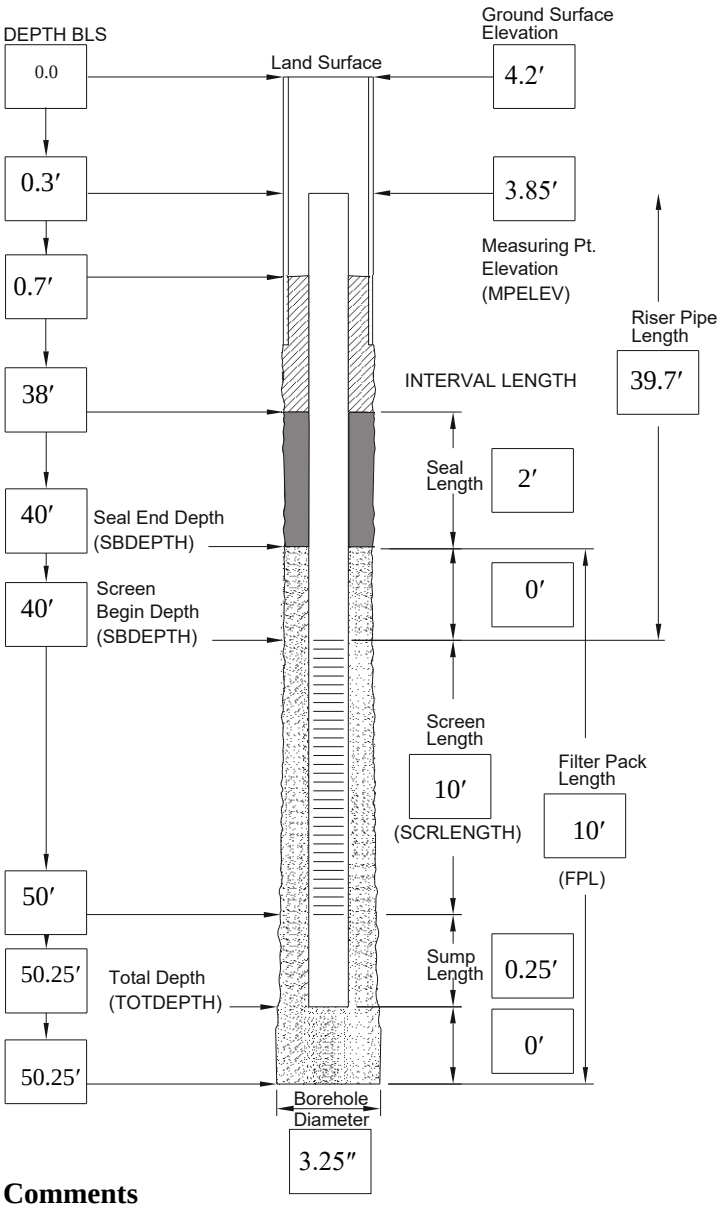
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0030

Drilling Company: GPI
Drillers: Bryan Nazworth
Geologist/Engineer: J. Bartlett
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 25 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 25 gallons
Recovered (Gal): ~ 13 gallons
Reviewed
By: Date: 12/22/16

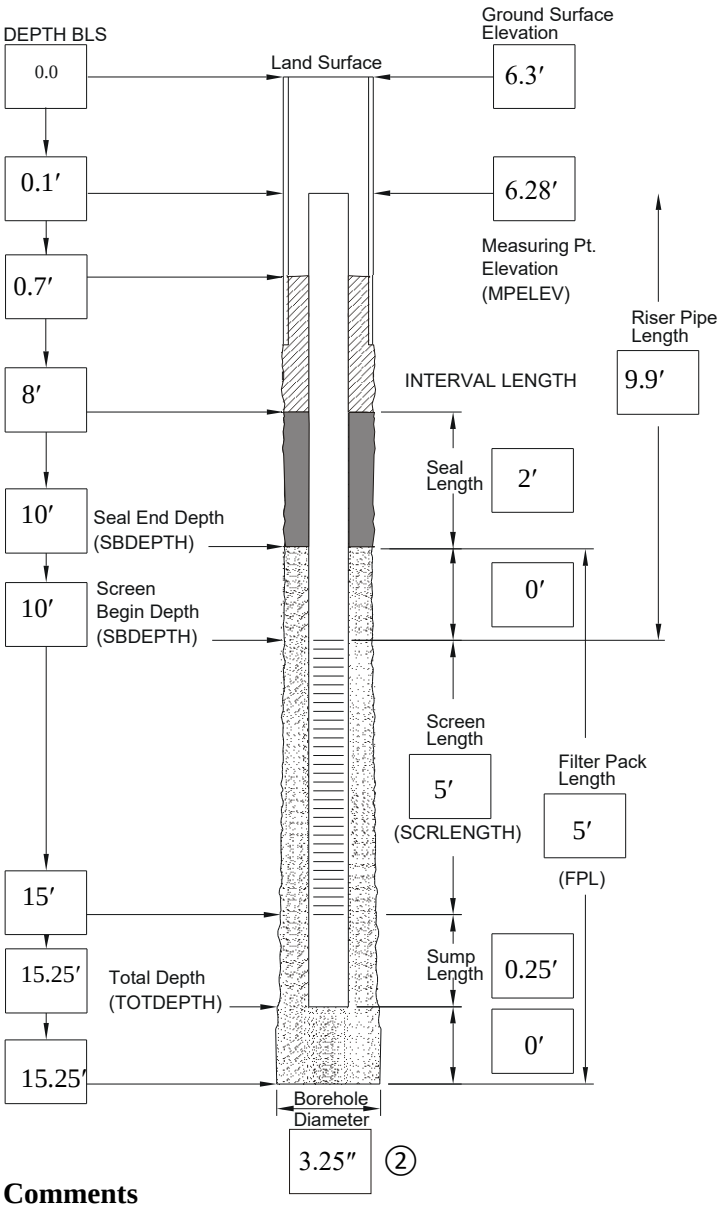
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0031

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 15 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 7 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 5′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 7 gallons
Recovered (Gal): ~ 3 gallons (pumped dry)
Reviewed
By: Date: 12/22/16

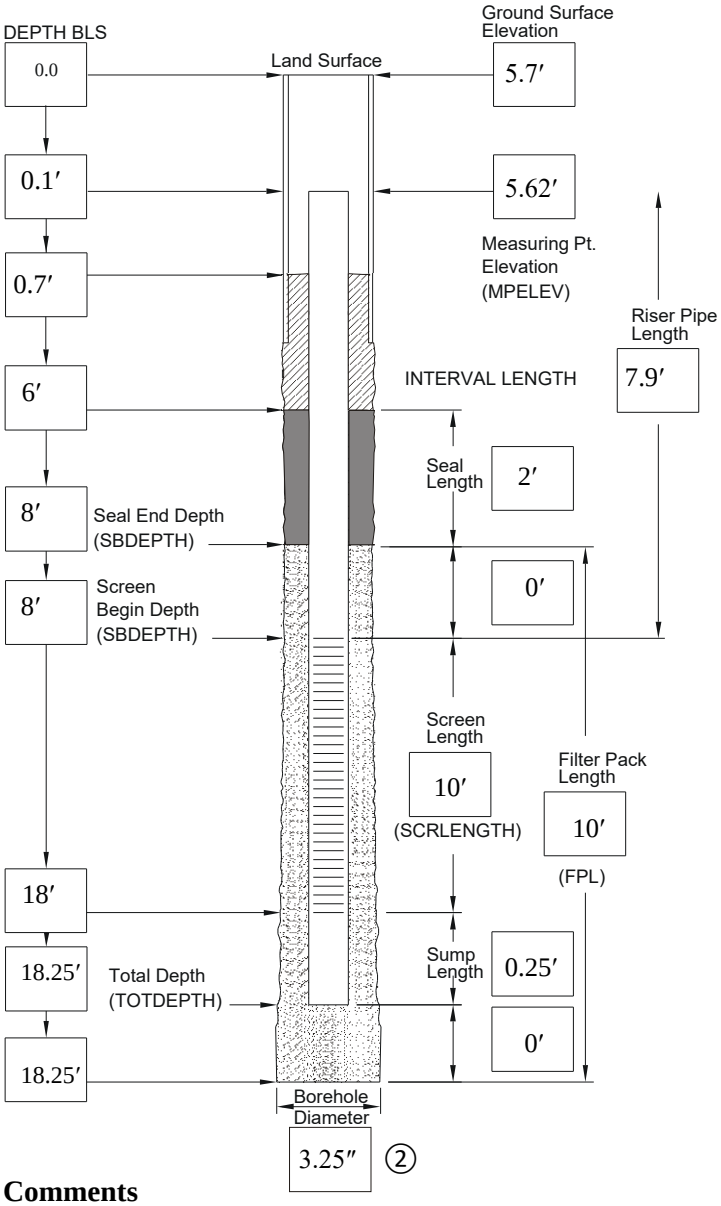
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0032

Drilling Company: GPI
Drillers: Paul Otto/Henry Kemp
Geologist/Engineer: Will Garde
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT/Flight Auger
Casing Installation Date: 11/17/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
②Flight auger to 15 ft BLS, then DPT to final depth.
Flight auger diameter same as DPT rod.

Well Completion
Guard Posts (Y / N) Date: 11/18/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/17/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 5 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 5 gallons
Recovered (Gal): ~ 6 gallons
Reviewed
By: Date: 12/22/16

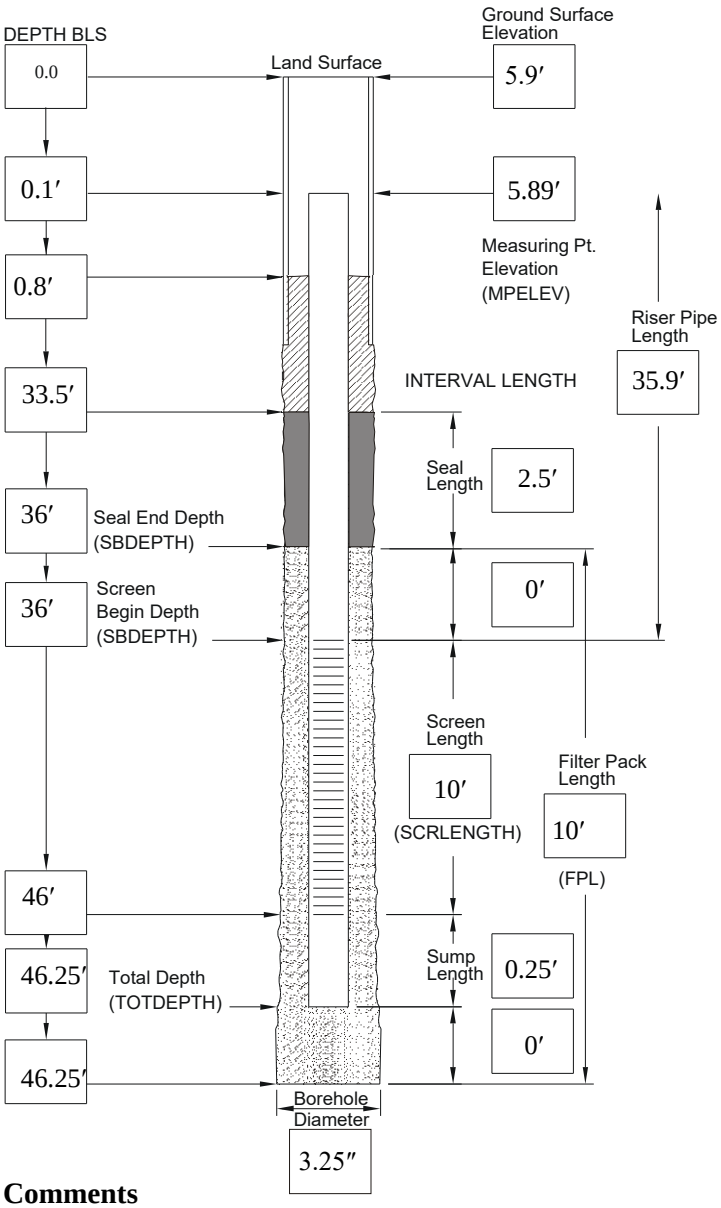
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0033

Drilling Company: GPI
Drillers: Brian N.; Gama R.
Geologist/Engineer: M. Burcham
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/21/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
Water used for seal install and placed in rods during drilling

Well Completion
Guard Posts (Y / N) Date: 11/21/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/21/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 5 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 15 gallons
Recovered (Gal): ~ 18 gallons
Reviewed
By: Date: 12/22/16

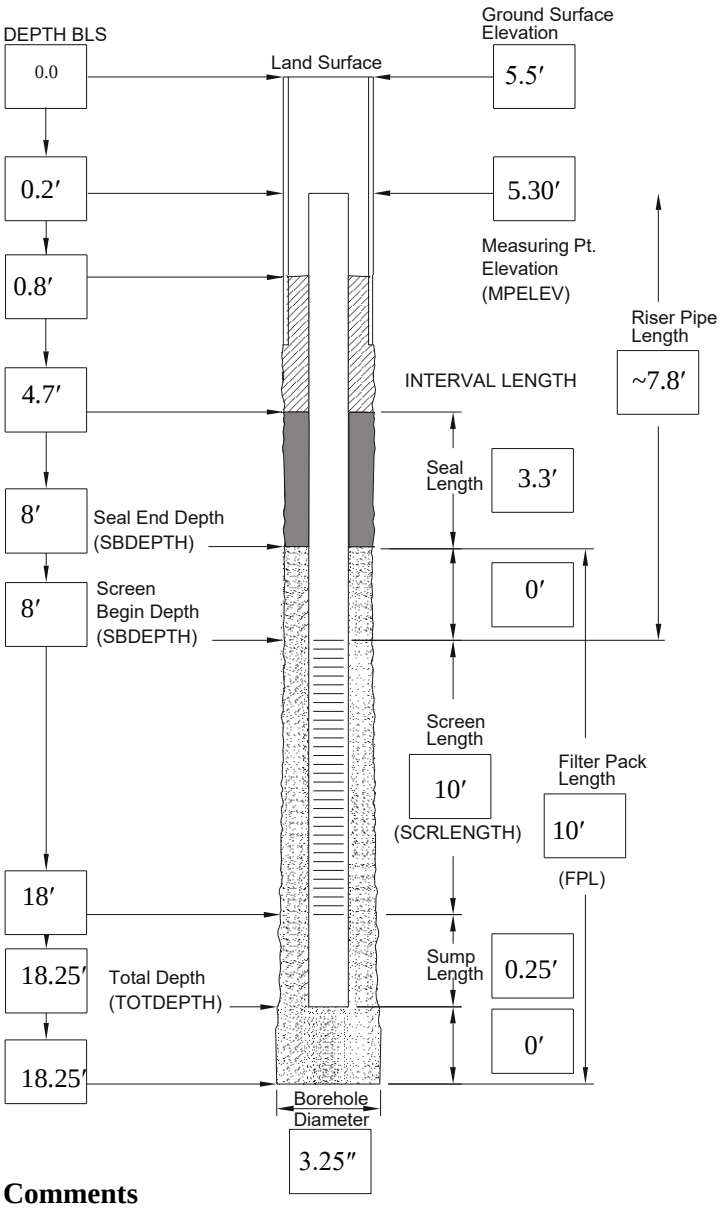
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0034

Drilling Company: GPI
Drillers: Brian N.; Gama R.
Geologist/Engineer: M. Burcham
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/21/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88
Water used for seal install and placed in rods during drilling; formation collapsed before ¾ bag seal placed

Well Completion
Guard Posts (Y / N) Date: 11/21/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/21/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 2 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 2 gallons
Recovered (Gal): ~ 10 gallons
Reviewed
By: Date: 12/22/16

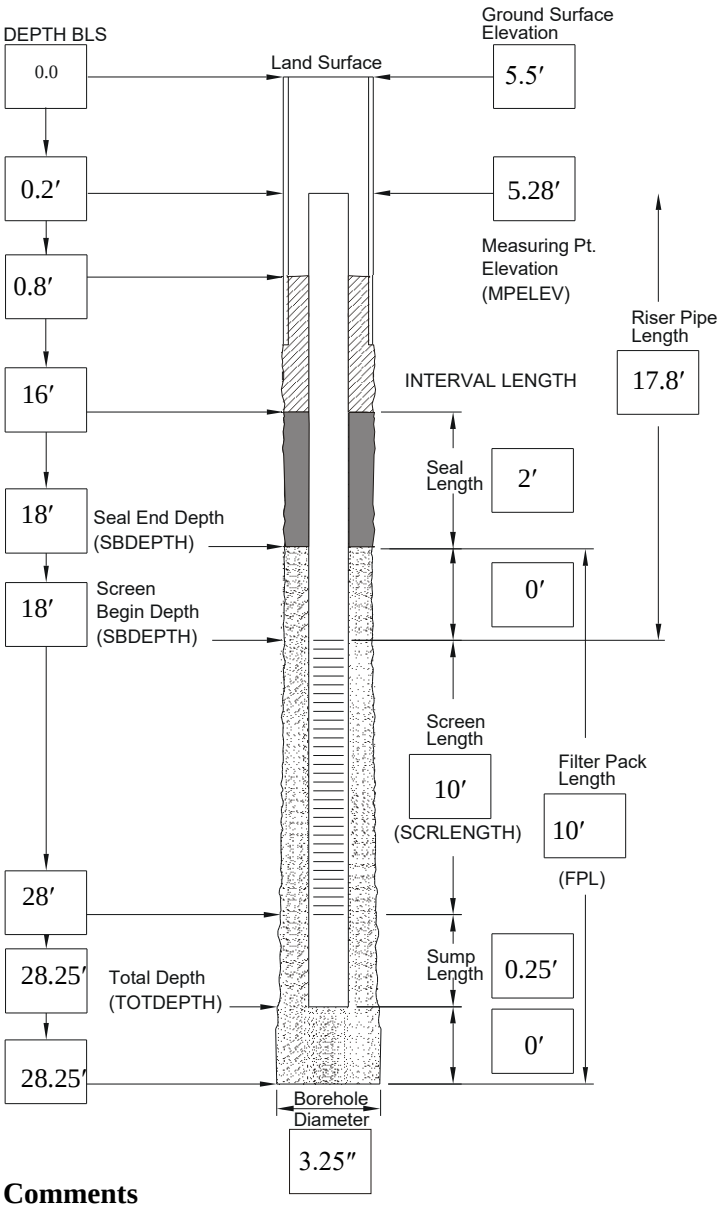
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0035

Drilling Company: GPI
Drillers: Brian N.; Gama R.
Geologist/Engineer: M. Burcham
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/21/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/21/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/21/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 5 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): ~ 5 gallons
Recovered (Gal): ~ 10 gallons
Reviewed
By: Date: 12/22/16

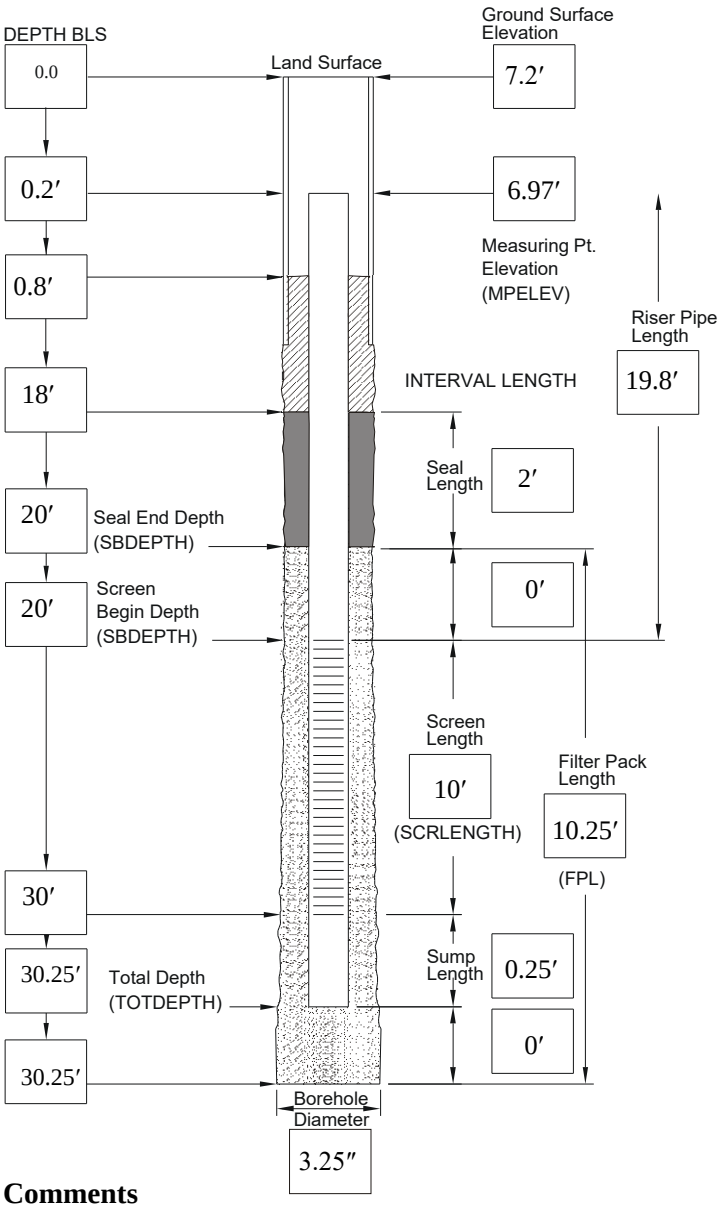
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0036

Drilling Company: GPI
Drillers: Brian N.; Gama R.
Geologist/Engineer: D. Sizemore
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/22/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/22/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/22/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: ~ 1 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): 1 gallon
Recovered (Gal): 11 gallons
Reviewed
By: Date: 12/22/16

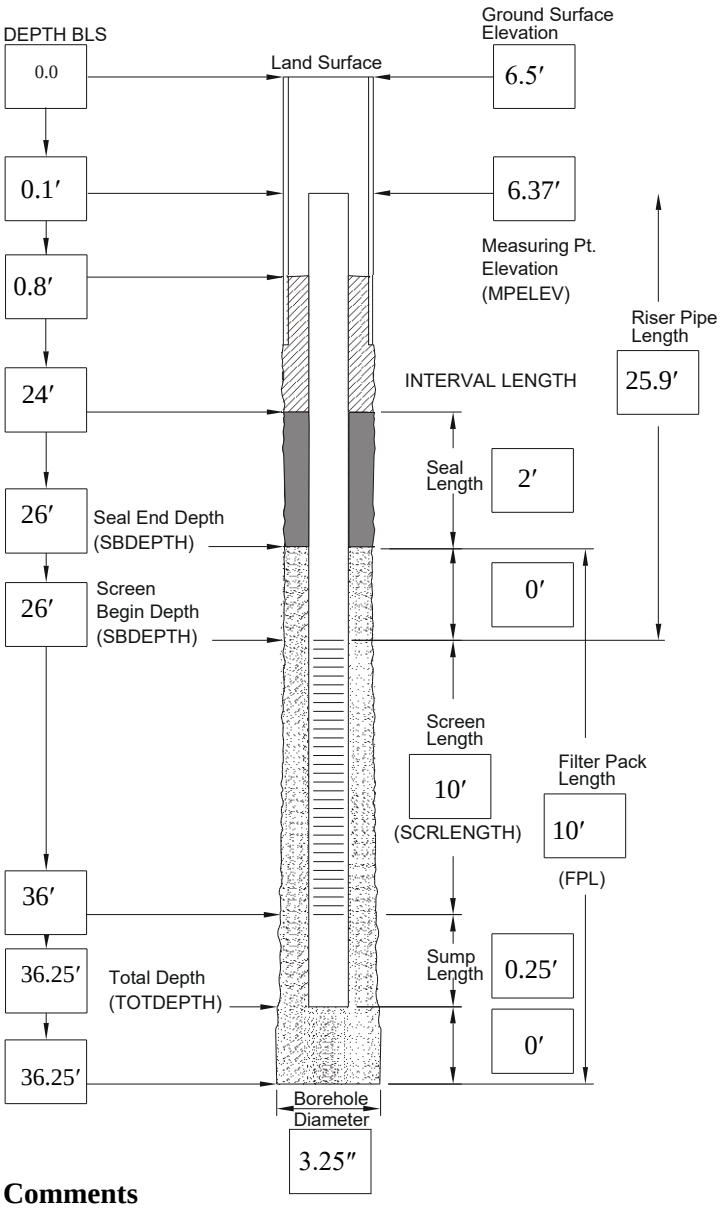
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0037

Drilling Company: GPI
Drillers: Brian N.; Gama R.
Geologist/Engineer: D. Sizemore
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/22/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/22/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/22/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: none
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): 0 gallons
Recovered (Gal): 10 gallons
Reviewed
By: Mike Burt Date: 12/22/16

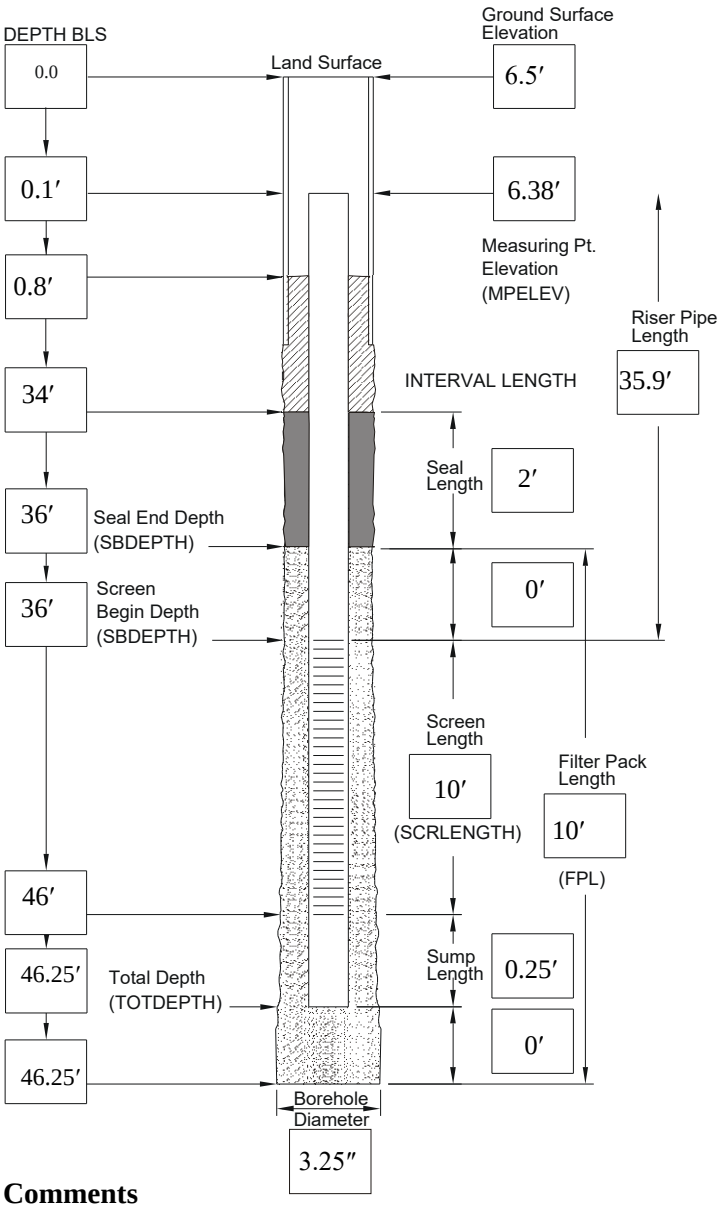
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0038

Drilling Company: GPI
Drillers: Brian N.; Gama R.
Geologist/Engineer: D. Sizemore
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/22/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD88

Well Completion
Guard Posts (Y / N) Date: 11/22/2016
Surface Pad Size: 2 ft x 4 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/22/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: 8 gallons
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): 8 gallons
Recovered (Gal): 10 gallons
Reviewed
By: Date: 12/22/16

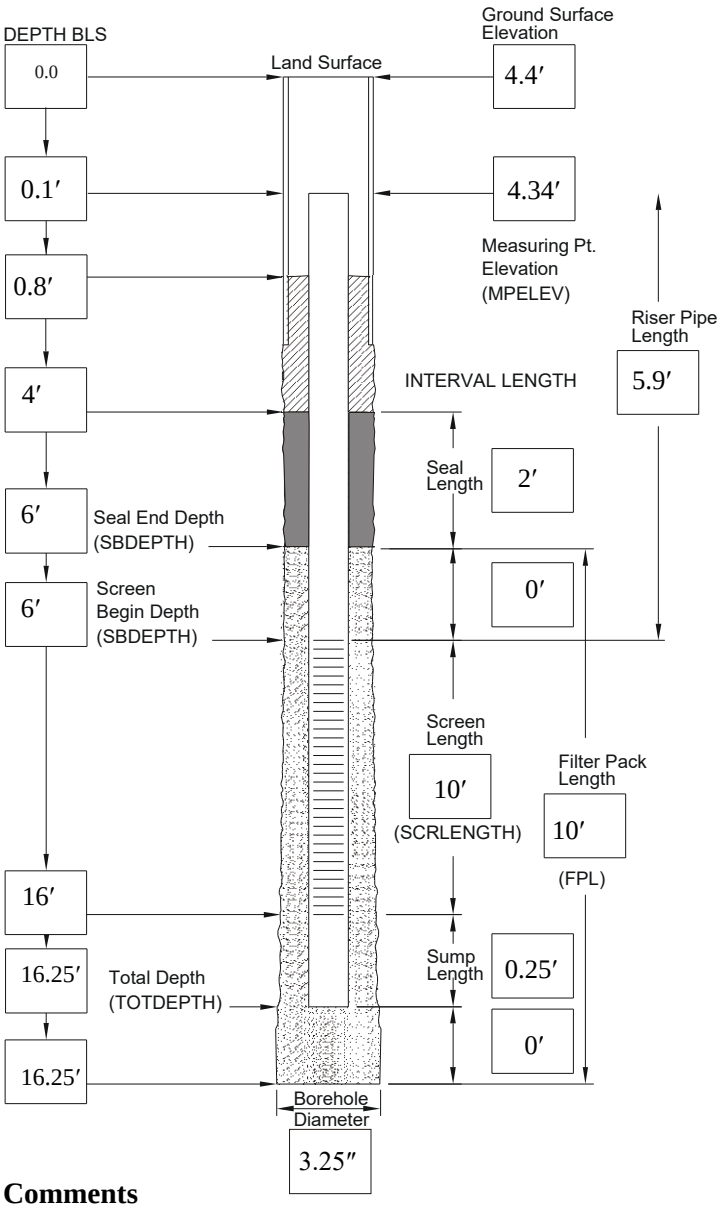
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0039

Drilling Company: GPI
Drillers: Brian N.; Gama R.
Geologist/Engineer: D. Sizemore
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/23/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/23/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/23/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: none
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): 0 gallons
Recovered (Gal): 13 gallons
Reviewed
By: Date: 12/22/16

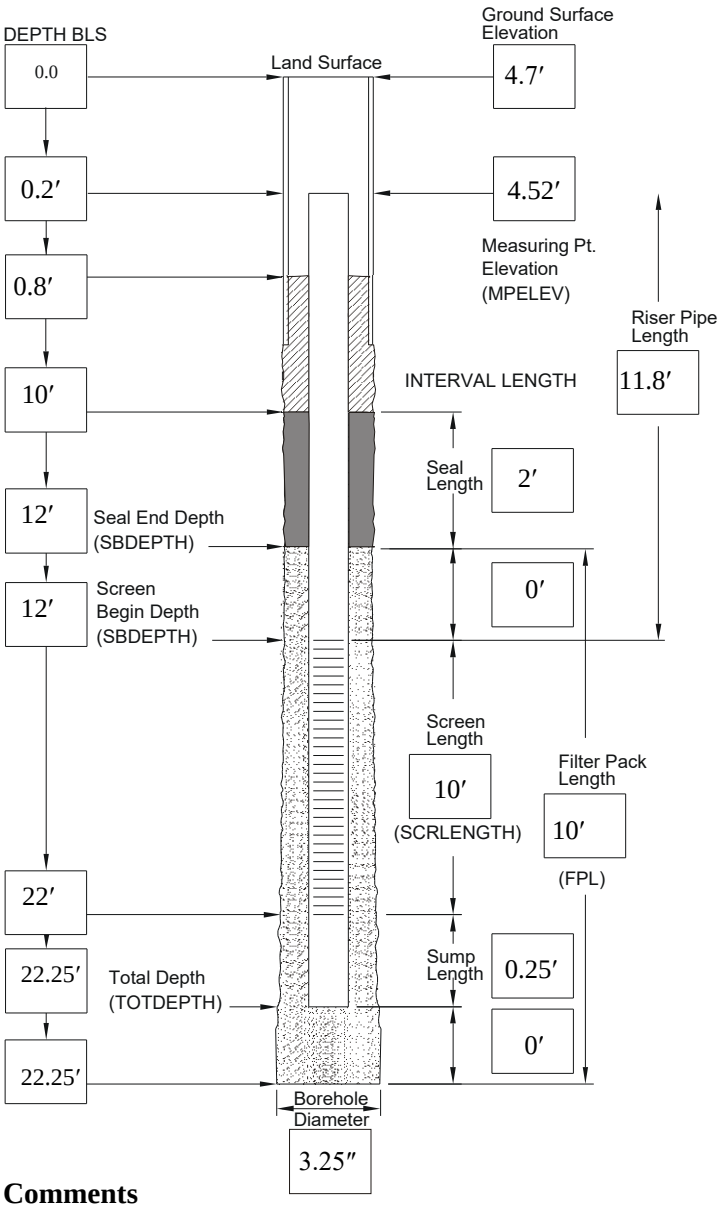
Geosyntec consultants

WELL CONSTRUCTION LOG
STANDARD FLUSH MOUNT

Well I.D.: MW0040

Drilling Company: GPI
Drillers: Brian N.; Gama R.
Geologist/Engineer: D. Sizemore
Signature:

Site: LC39B
Project Number: FR1352E/07
Installation Method: DPT
Casing Installation Date: 11/23/2016
Well Type: Monitoring Well
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Elevations measured in feet NAVD 88

Well Completion
Guard Posts (Y / N) Date: 11/23/2016
Surface Pad Size: 2 ft x 2 ft
Protective Casing or Cover
Diameter/Type: 8-inch steel manhole
Depth BGS: 8″ Weep Hole (Y / N)
Grout
Composition/Proportions: 1:1 neat Portland cement; water
Placement Method: pour through tooling

Seal Date: 11/23/2016
Type: 30/65 fine sand
Source: Standard Sand and Silica Co.
Set-up/Hydration Time: Not Applicable
Placement Method: pour through tooling
Vol. Fluid Added: none
Filter Pack
Type: 20/30 sand pre-pack
Source: GeoInsight
Amount Used: 10′ Pre-pack
Placement Method: Attached to well casing
Well Riser Pipe
Casing Material: Schedule 40 PVC
Casing Inside Diameters: 1 in.
Screen
Material: Schedule 40 PVC
Inside Diameter: 1 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NA
Sump or Bottom Cap (Y N)
Type/Length: PVC Cap, 3″
Backfill Plug (Y / N)
Material: Not Applicable
Placement Method: Not Applicable
Set-up/Hydration Time: Not Applicable
Total Water Volume During Construction
Introduced (Gal): 0 gallons
Recovered (Gal): 5.5 gallons
Reviewed
By: Date: 12/22/16

JANUARY THROUGH FEBRUARY 2017
AIR SPARGE WELL INSTALLATION

WELL CONSTRUCTIONS LOGS

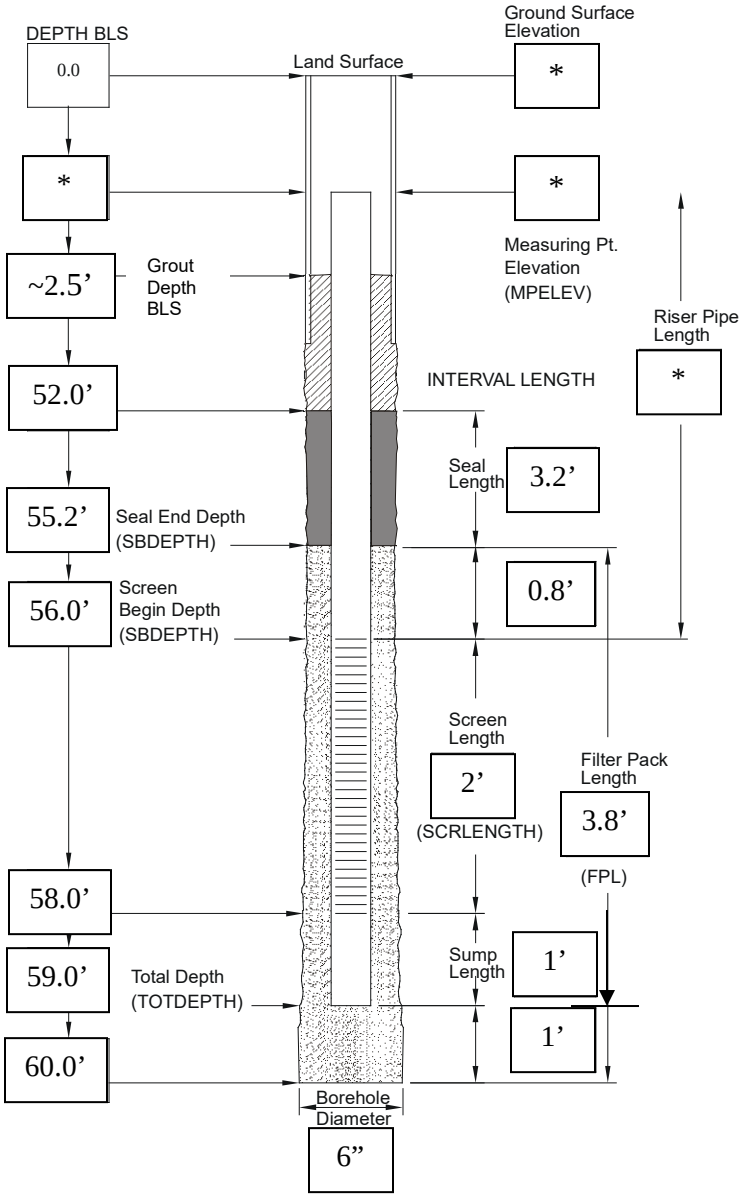
why no riser pipe length? Let's discuss - even if FECC was going to complete the well head we should still know the rise prpe length - we can at leaat record the PVC length
MB: No riser pipe length because we did not go back and measure the final depth to the top of casing once the wells were cut to size. GPI left all of them as stickups above grade

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW001
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/18/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/18/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
Elevation adjusted due to sandy clay/shell fragment layer identified >58 ft BLS
*FECC to complete ASWs

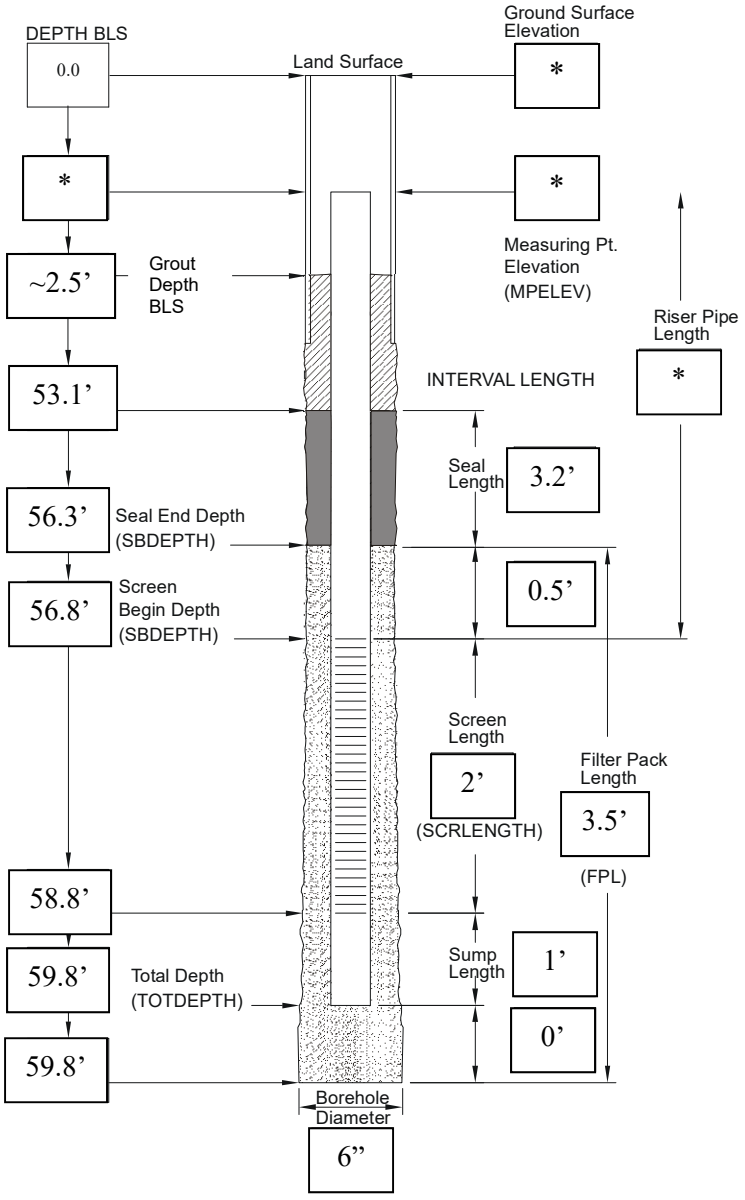
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW002
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASWs

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/19/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

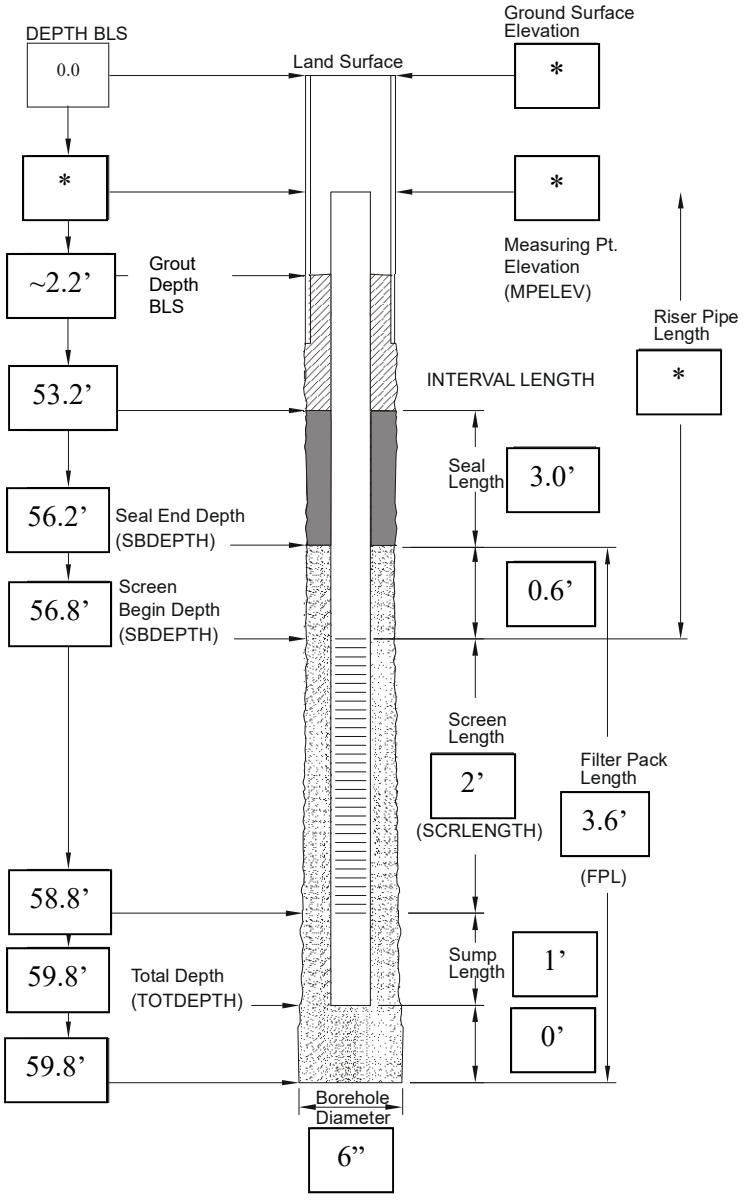
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW003
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/13/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/13/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Details to be included in CCR

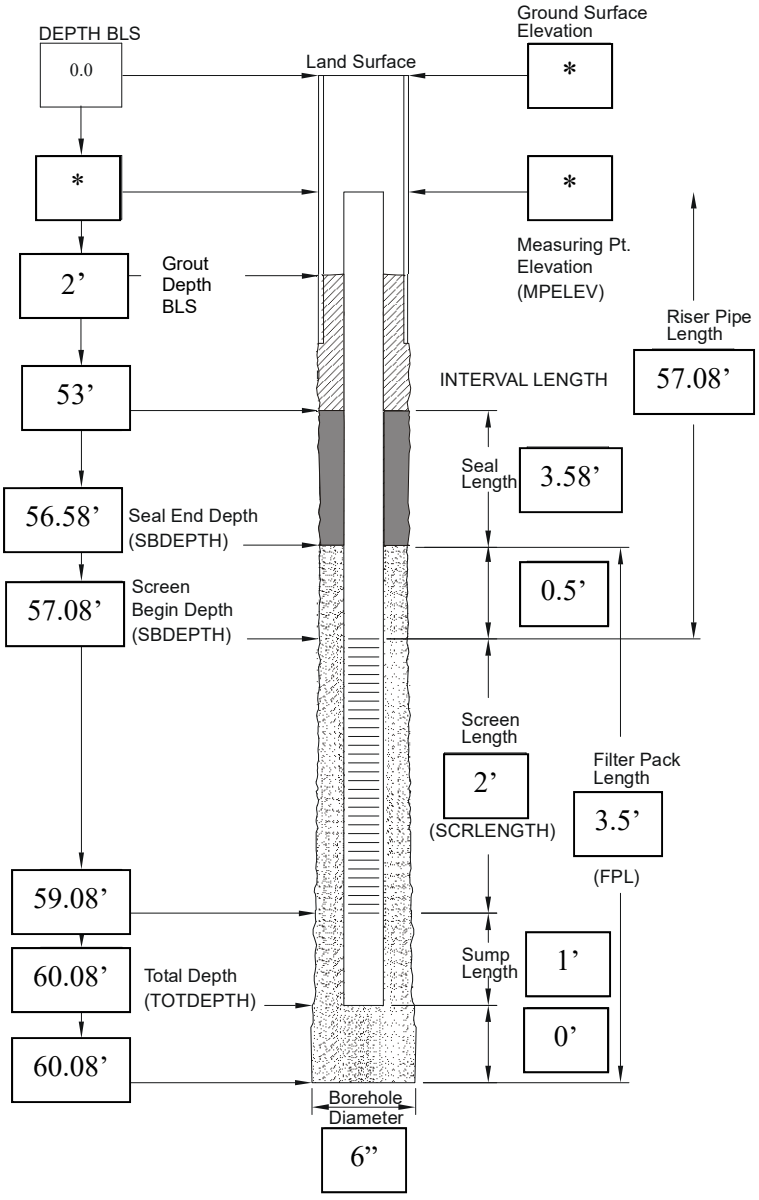
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW004
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/11/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/11/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 10:18-10:44 (26 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

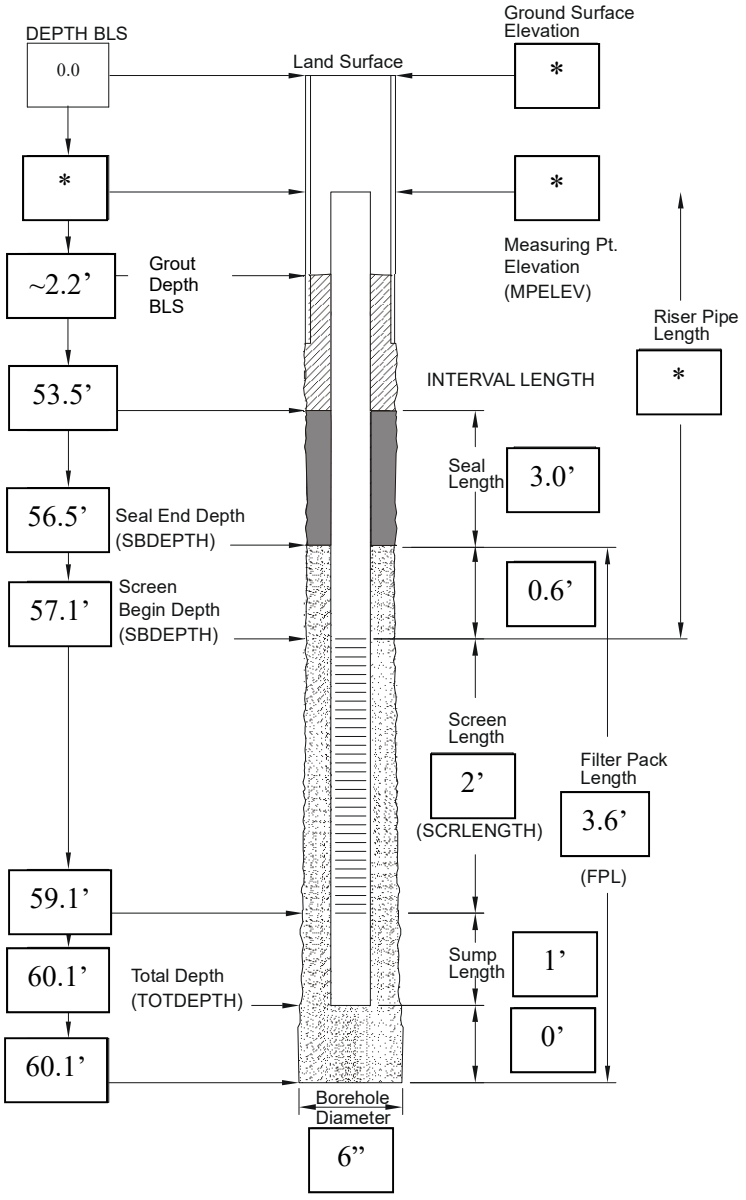
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW005
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/13/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/13/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Details to be included in CCR

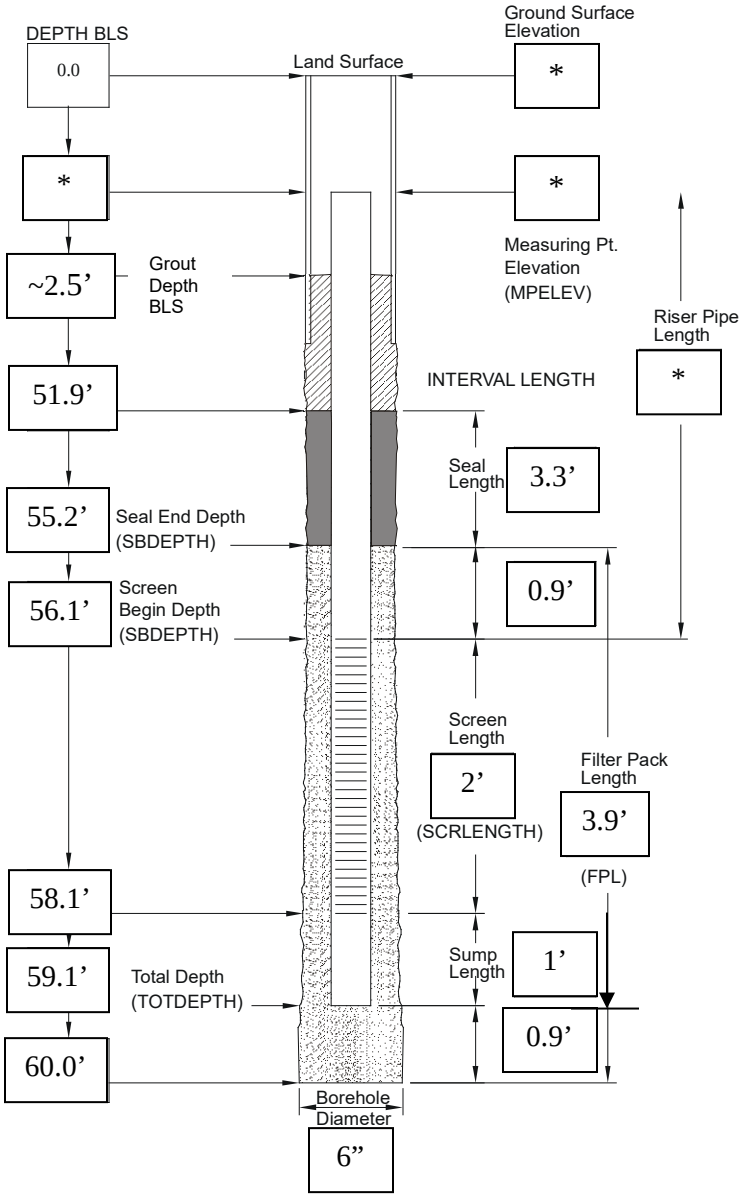
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW006
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Direct buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/19/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
Screen elevation changed to 56-58 ft BLS due to clayey layer observed below 58 ft BLS
*FECC to complete ASWs

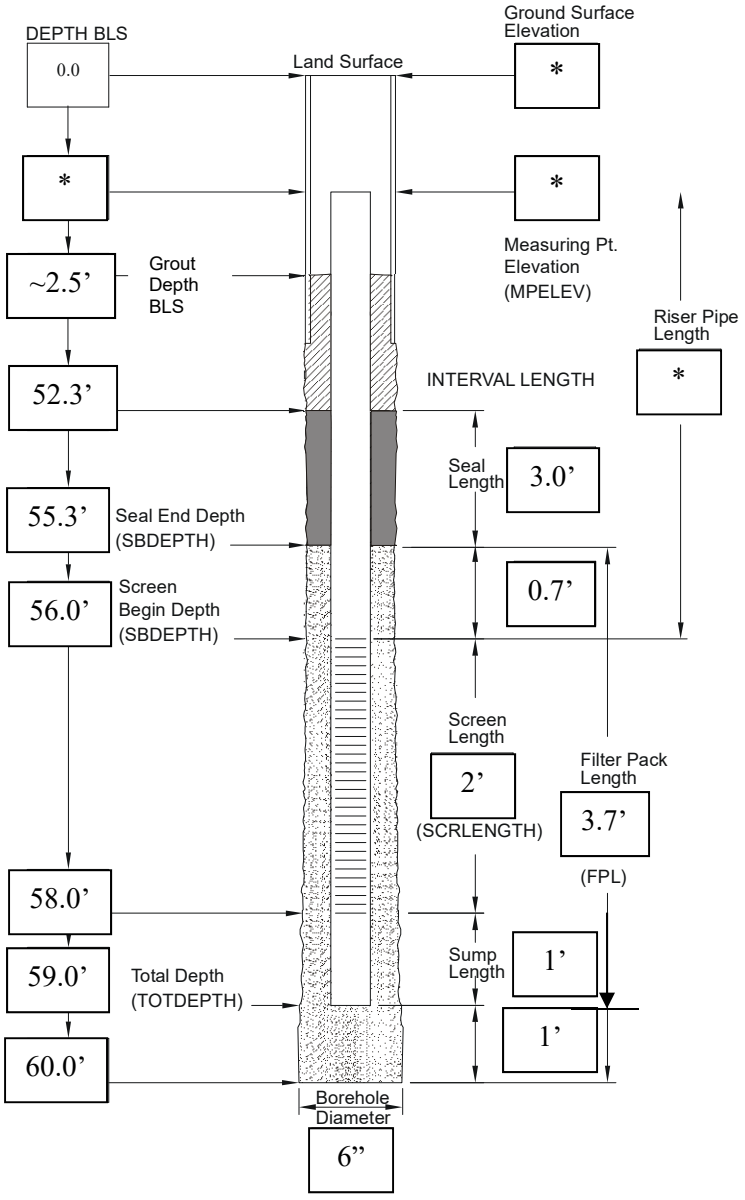
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW007
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/19/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
Depth of screen increased due to clayey layer observed starting at 57.5 ft BLS
*FECC to complete ASWs

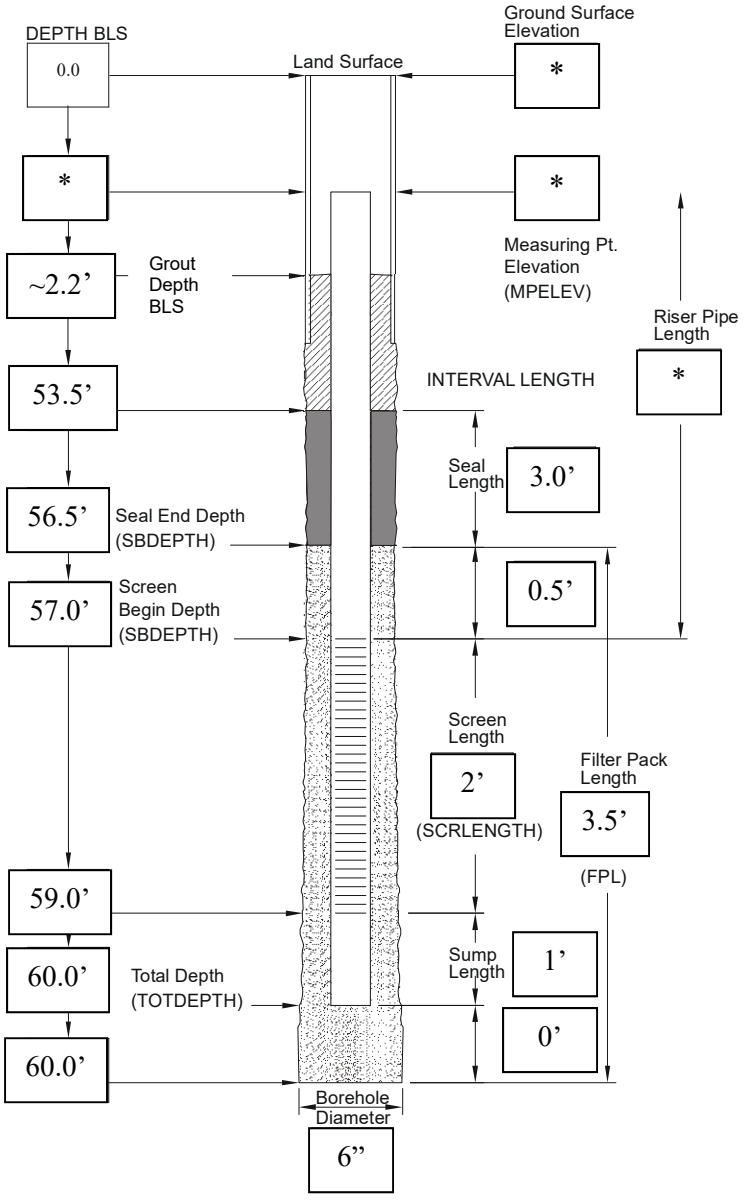
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW008
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/13/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/13/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion details to be included in CCR

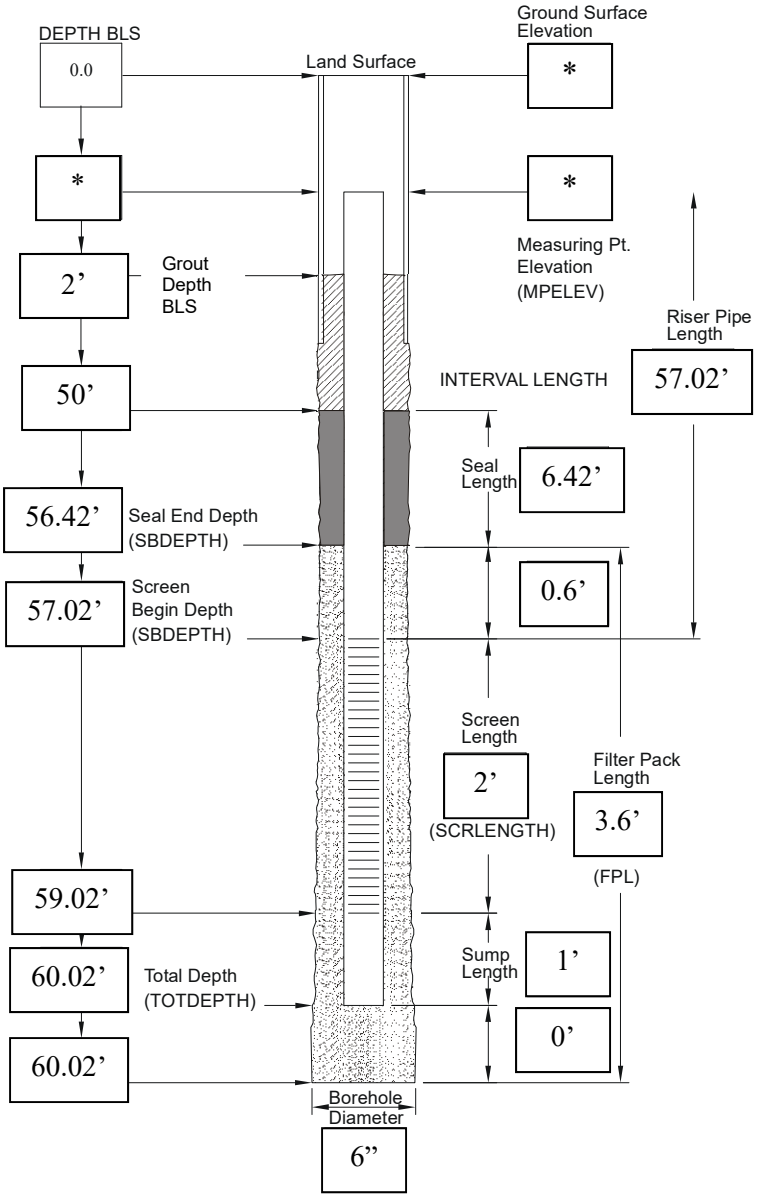
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW009
Drilling Company: Groundwater Protection
Drillers: Dave Longno
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/10/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

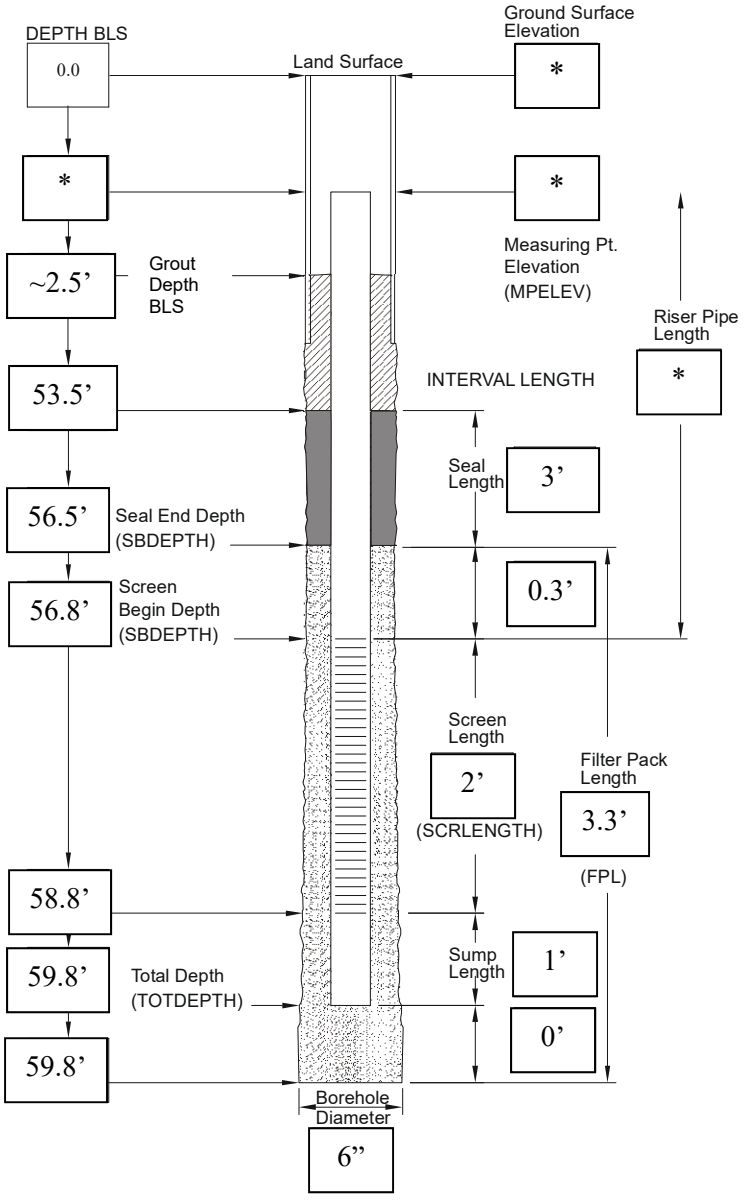
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW010
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/16/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~25 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be completed by FECC

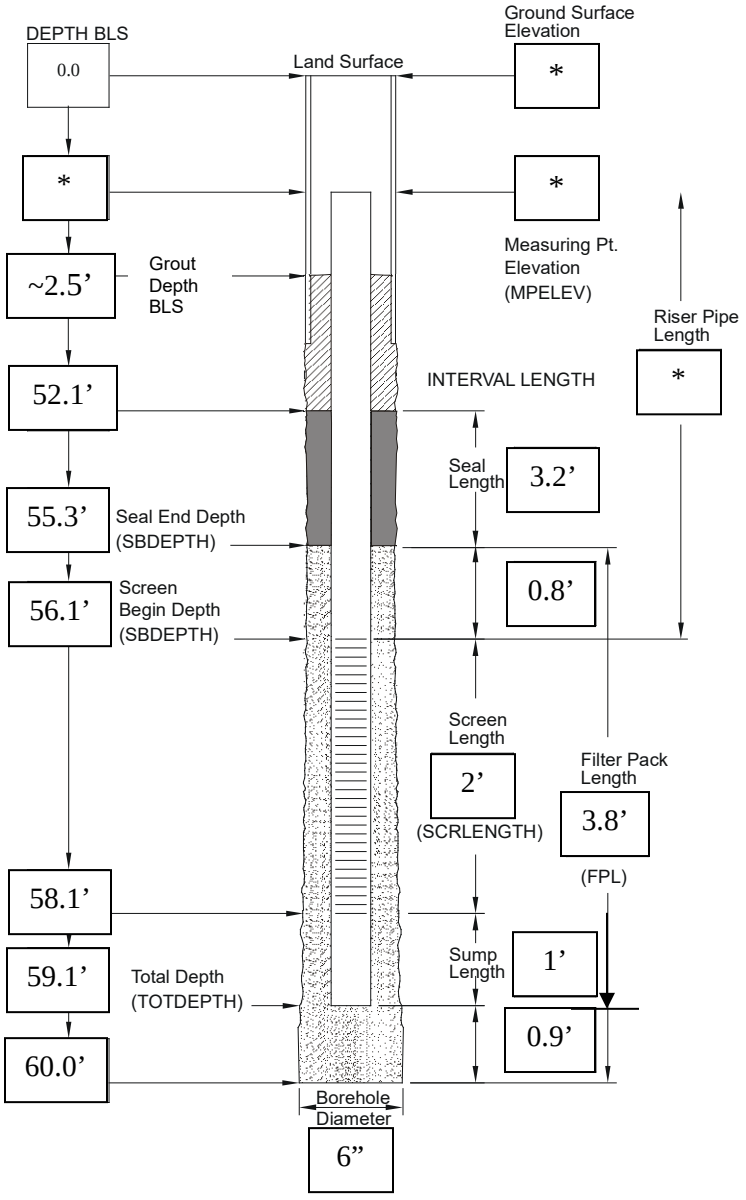
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW011
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/20/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/20/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will do completions
Screen elevation change to 56-58' due to shell lithology at 59'

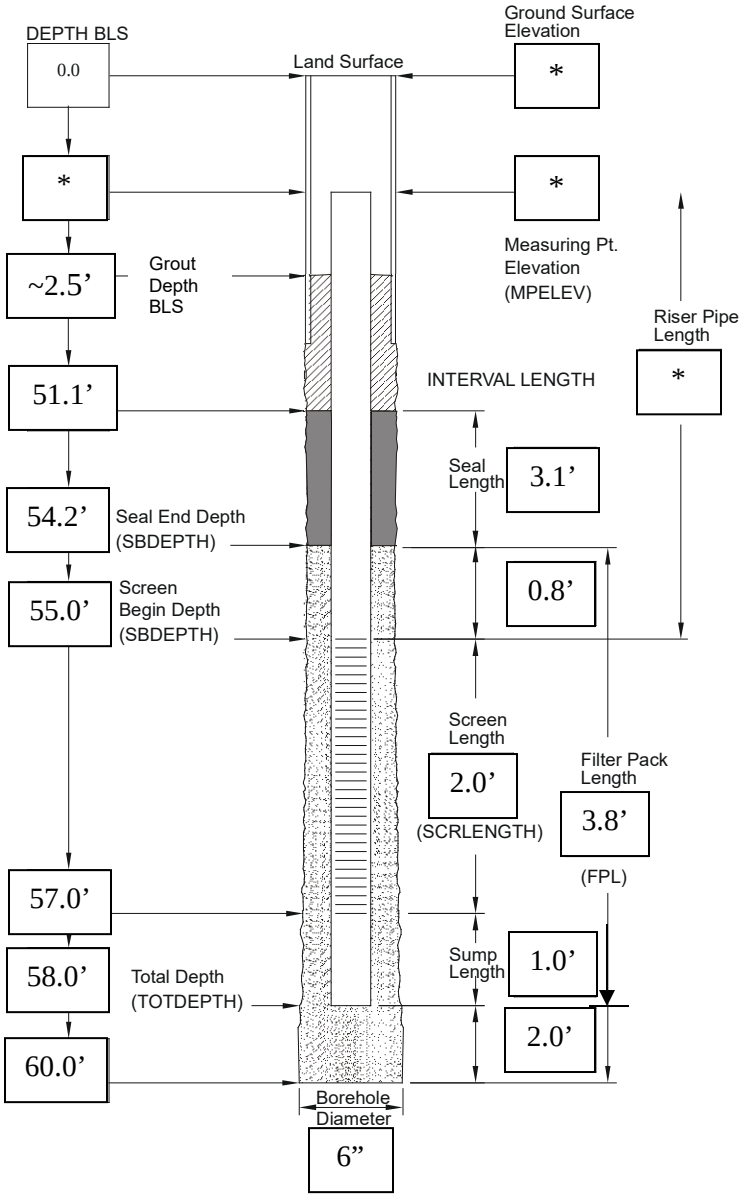
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW012
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/20/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/20/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to do completions
Screen interval changed to 55-57 ft BLS due to clayey/shell layer at 58 ft BLS

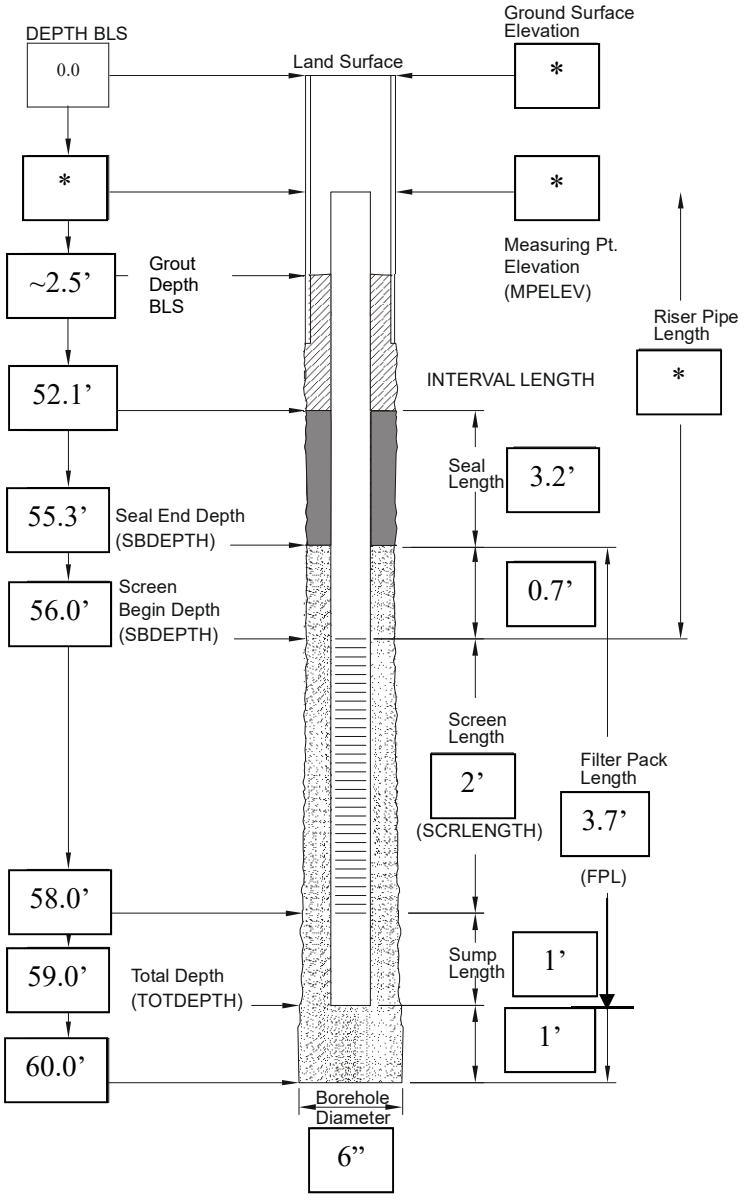
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW013
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/19/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~1 hr
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
Well screen changed to 56-58 ft BLS due to clayey Lithology ~58 ft BLS
*Completions to be done by FECC

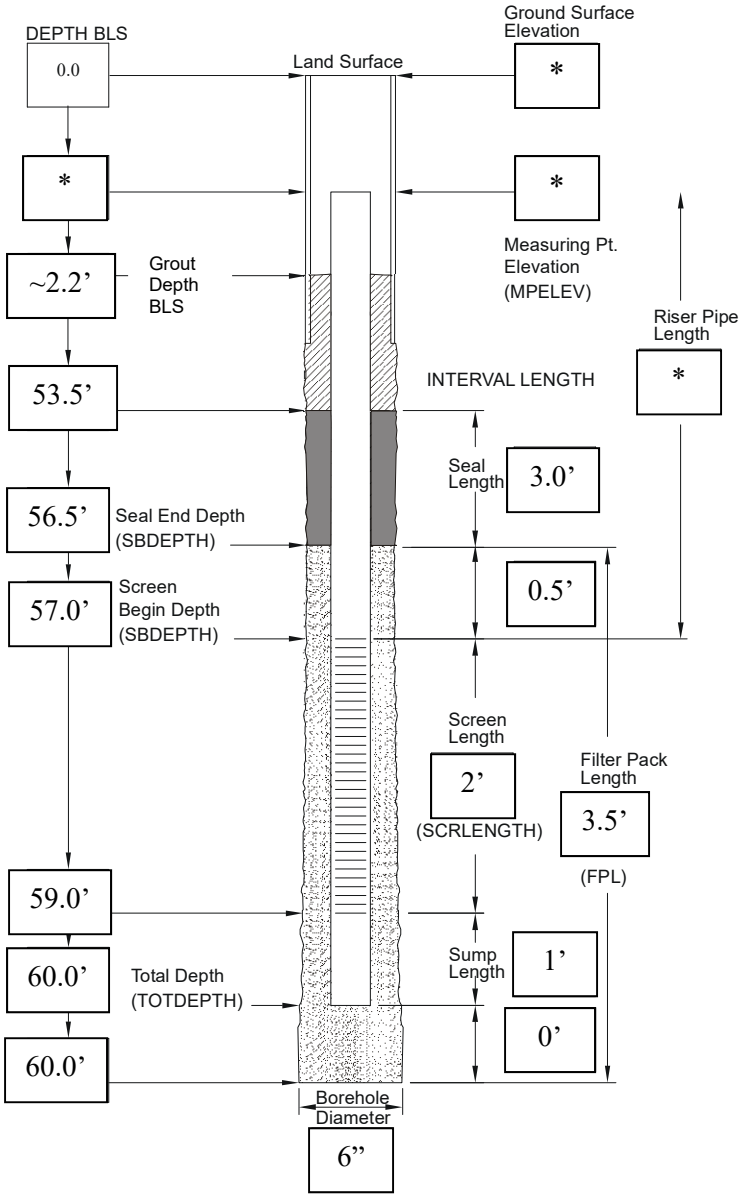
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW014
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/12/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

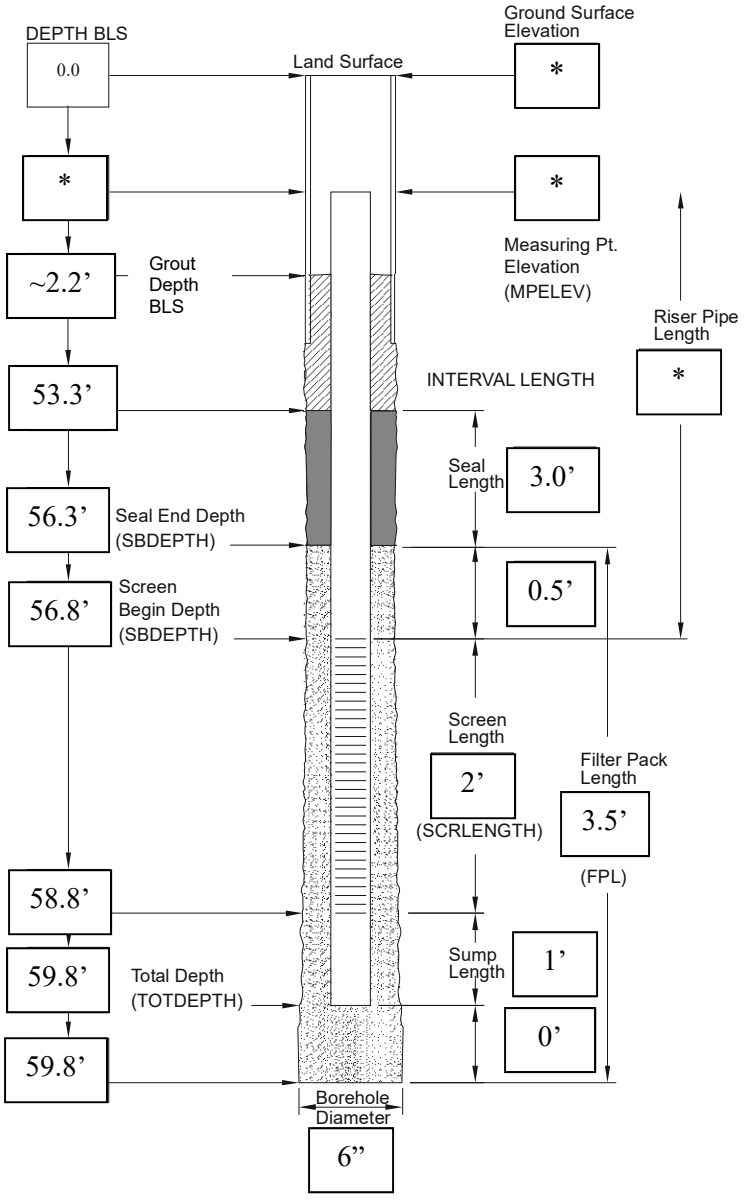
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW015
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/12/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

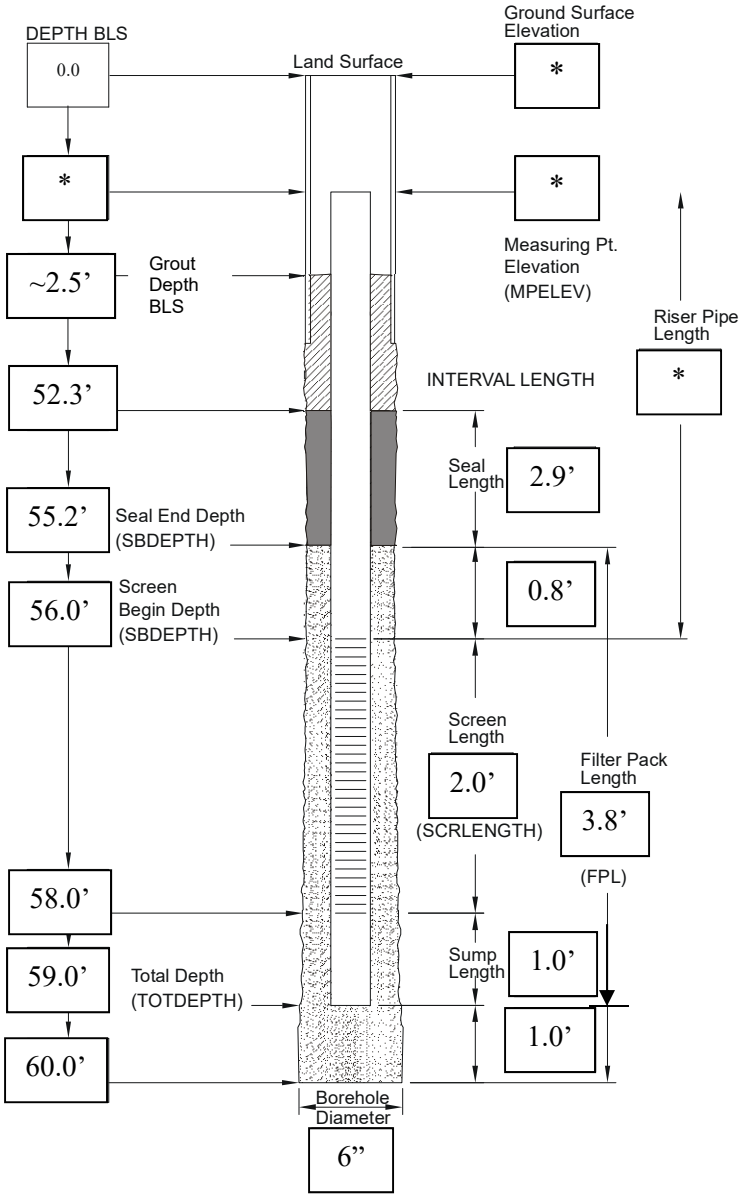
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW016
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/16/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~50 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
Elevations of screen changed due to clay layer at 58 ft BLS
*Surface completions to be completed by FECC

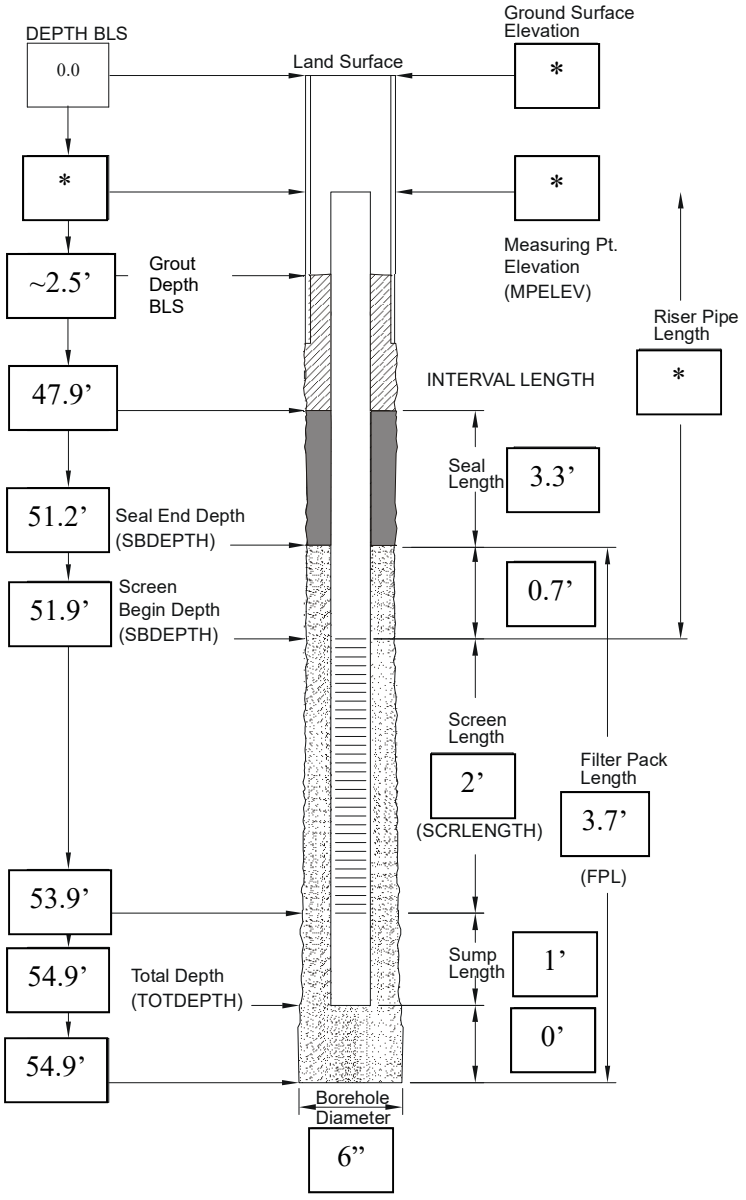
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW017
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/16/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: Overnight
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well completions to be completed by FECC

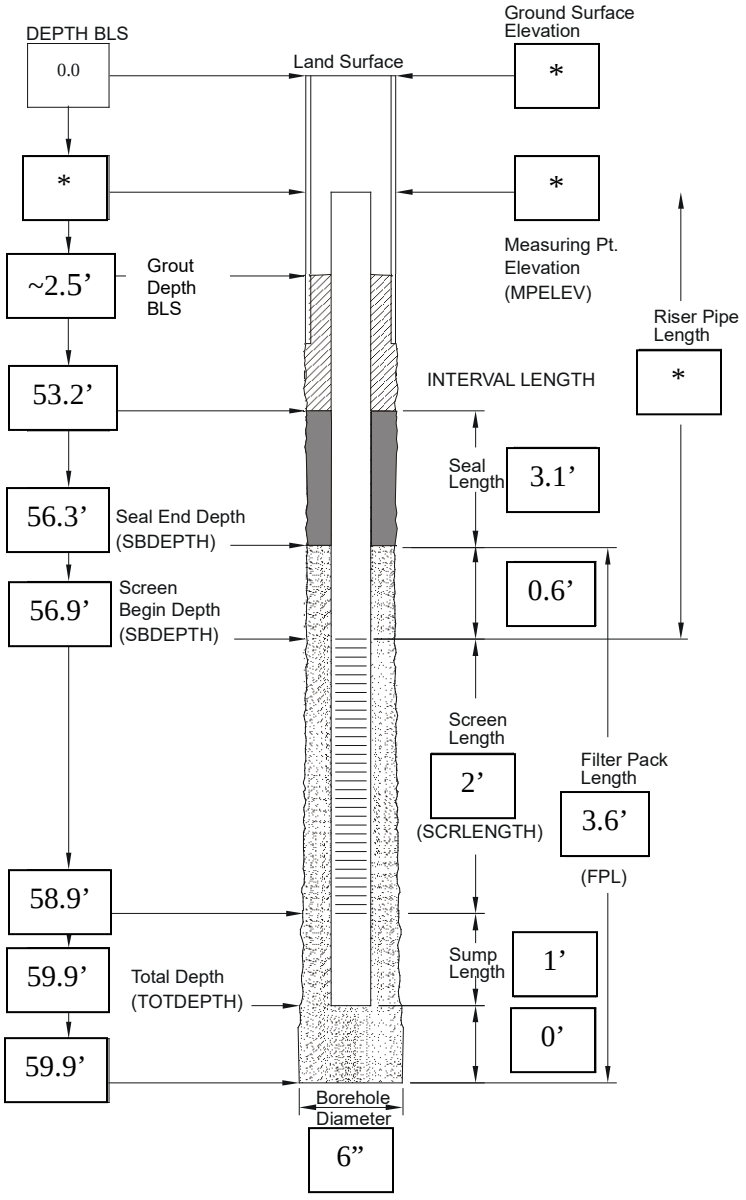
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW018
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/20/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/20/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete wells

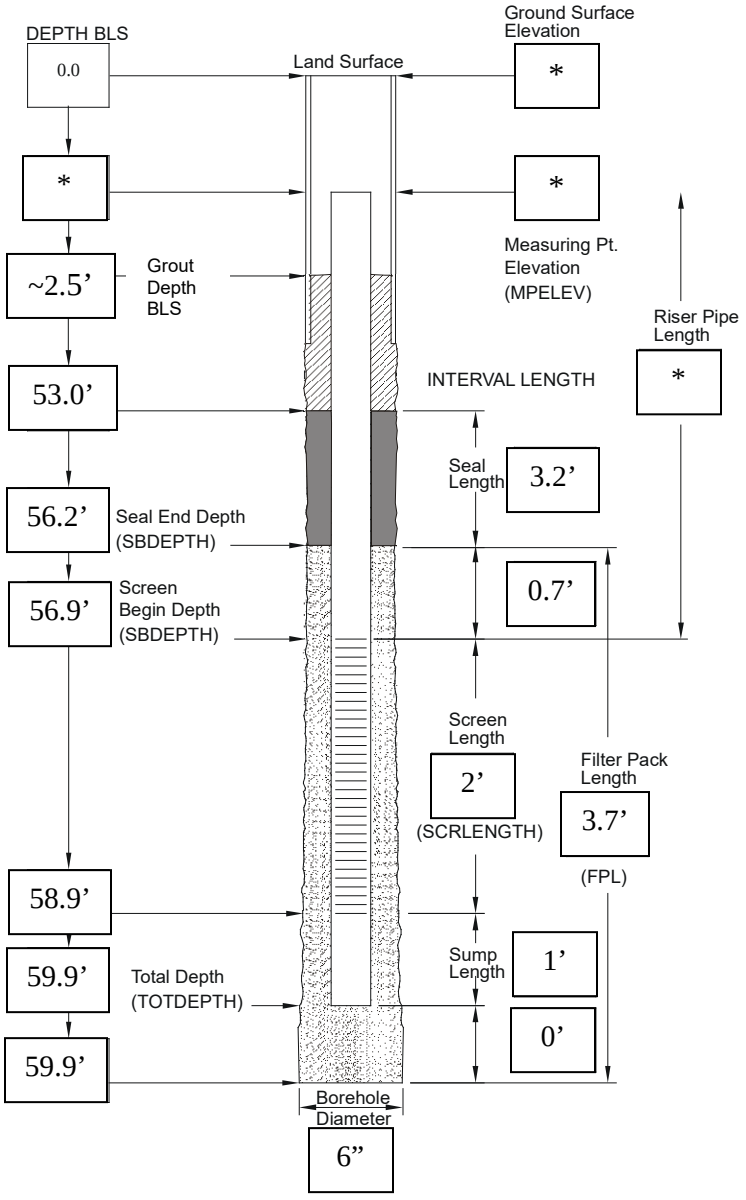
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW019
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/20/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/20/17
Type: Bentonite pellets
Source: Pel-Plug
Set-up/Hydration Time: ~1 hr
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to do completions

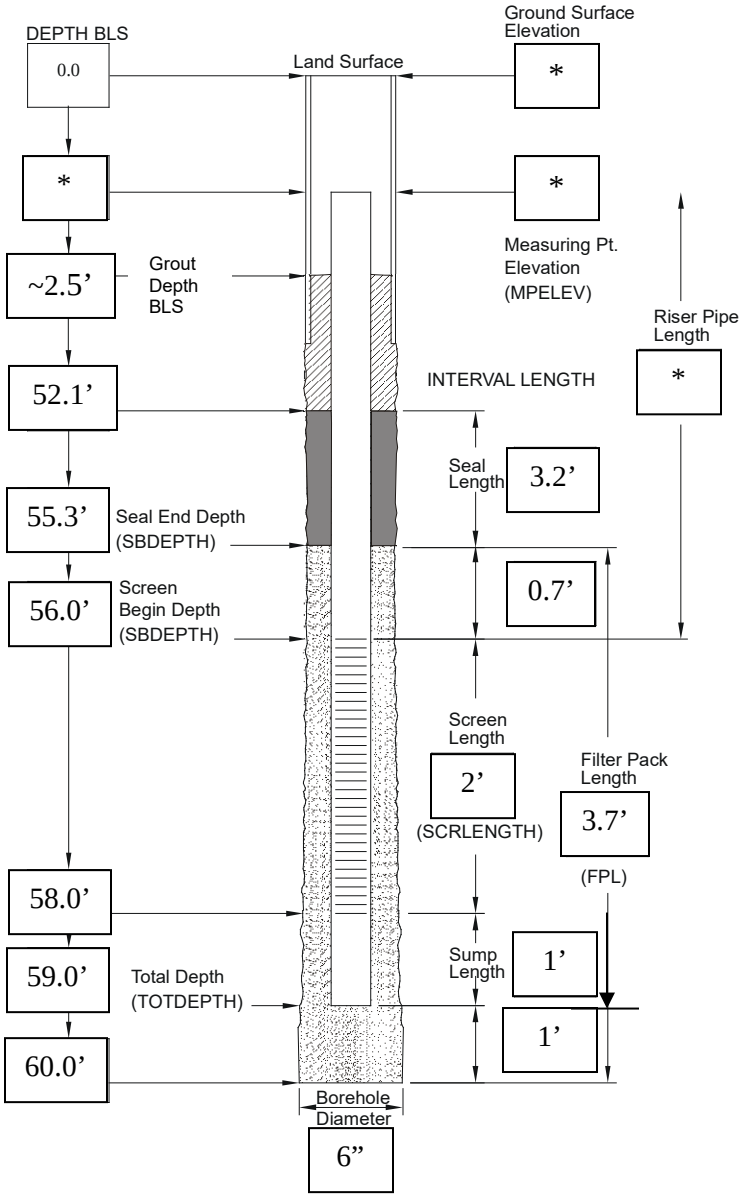
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW020
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/20/17
Well Type: Air Sparge
Well Completion Method: Direct buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/20/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: Over weekend
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
Screen interval changed to 56'-58' due to lithology
*FECC to complete ASWs

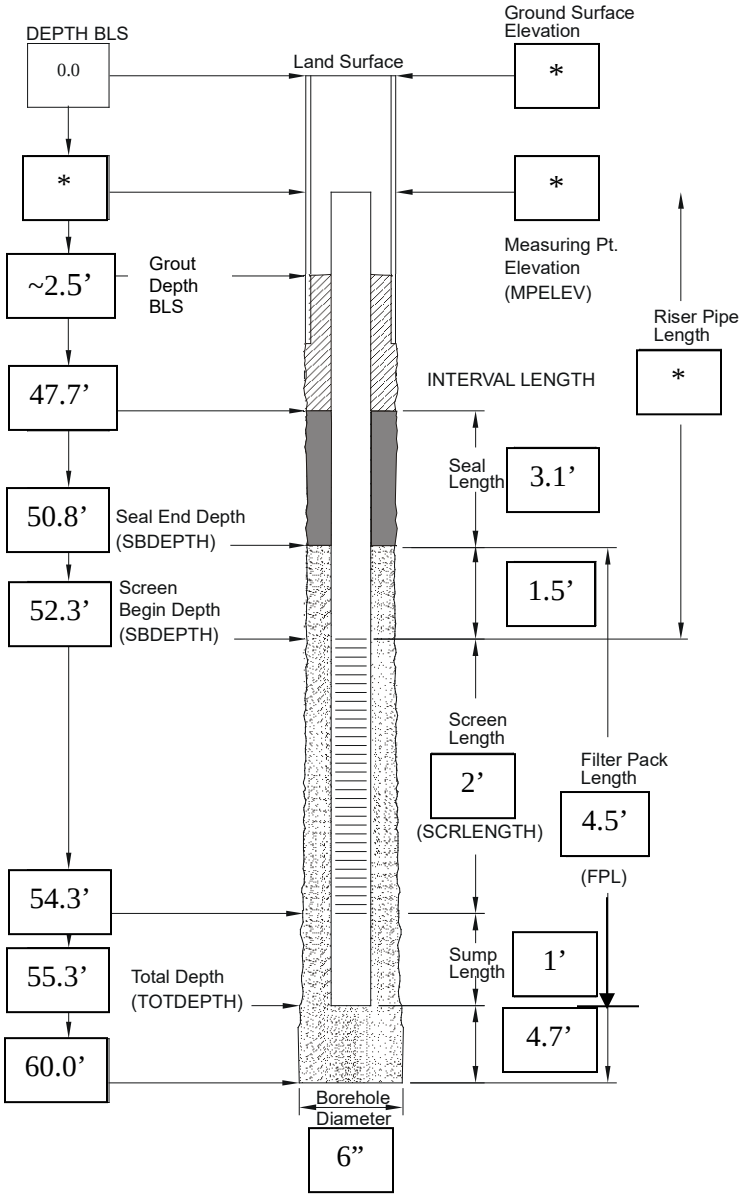
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW021
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/23/17
Well Type: Air Sparge
Well Completion Method: Direct buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/23/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Filter packs installed too high due to math error in field
Screen interval changed to ~52.5'-54.5' due to lithology

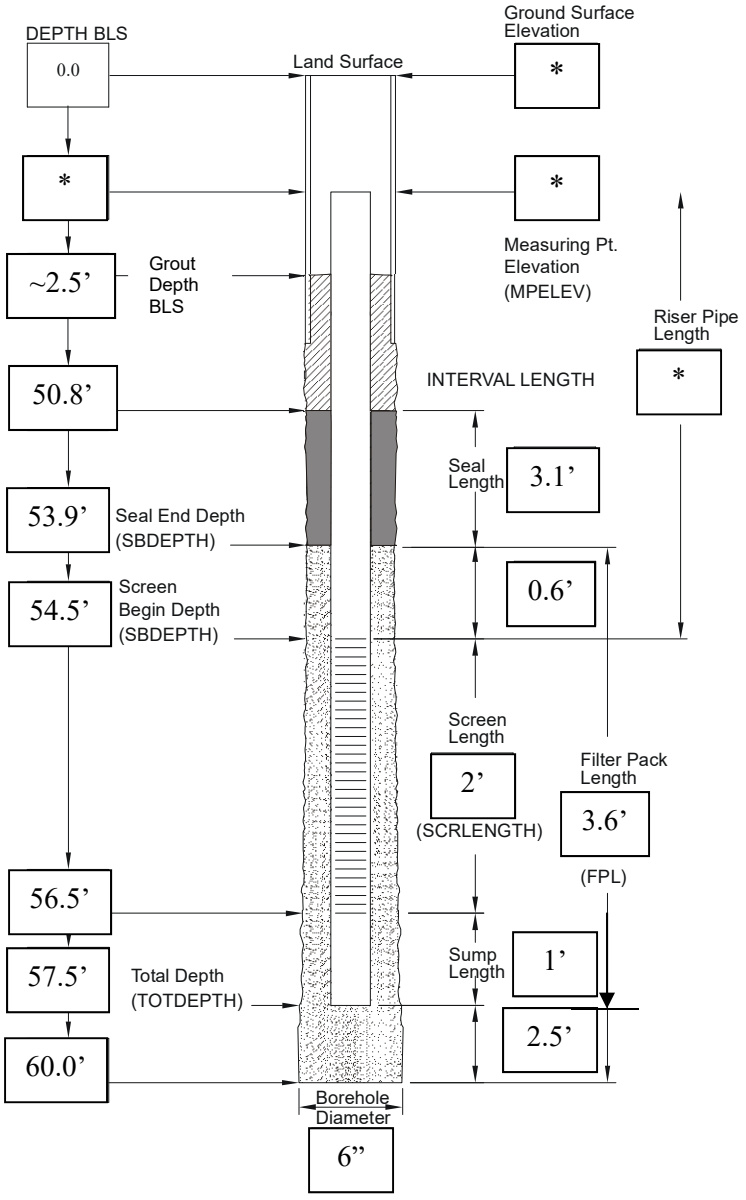
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW022
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/19/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time:
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
Well screen changed to 54.5'-56.5' BLS due to clayey lithology at ~57.25' BLS
*FECC to complete ASWs

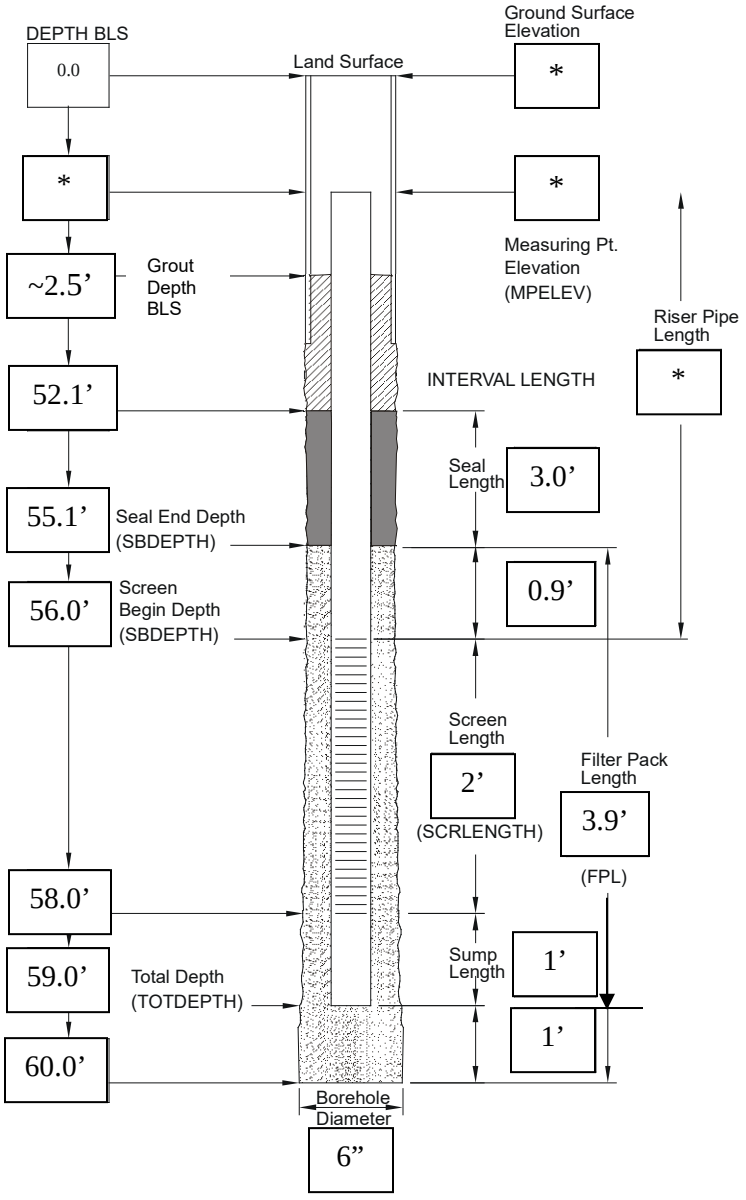
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW023
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/24/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~45 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 56-58 ft BLS due to clay/shell lithology

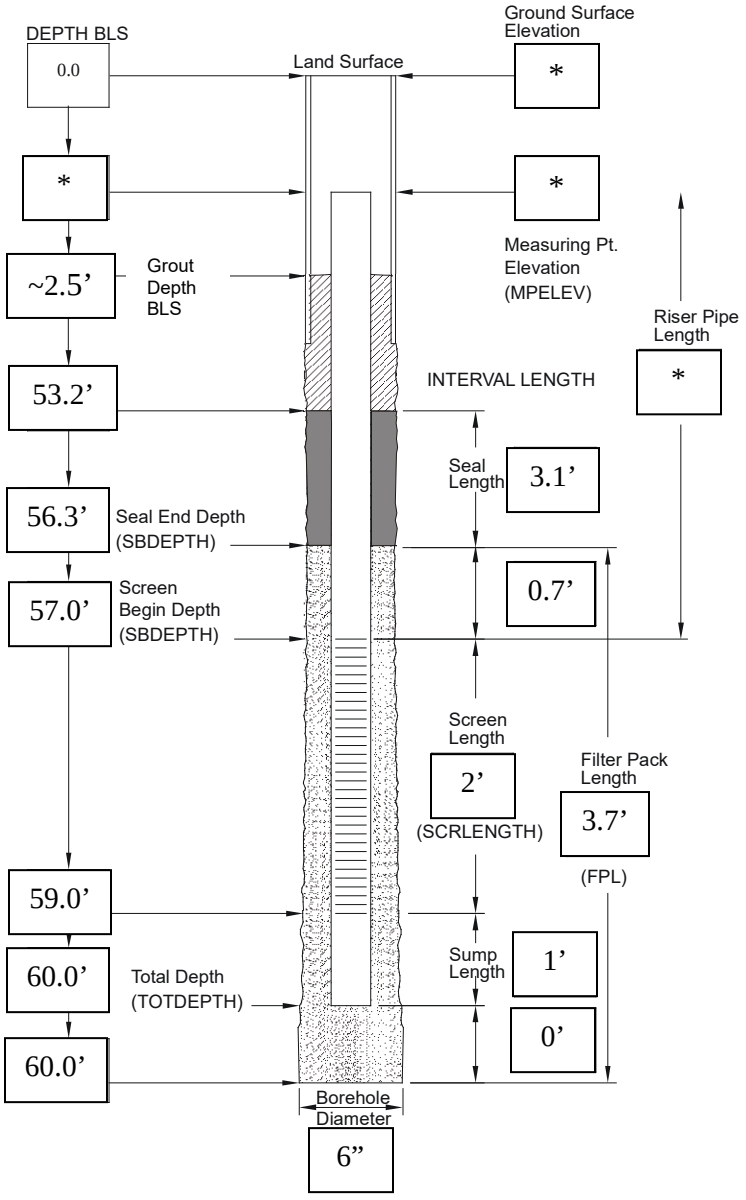
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW024
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/24/17
Type: Bentonite pellets
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

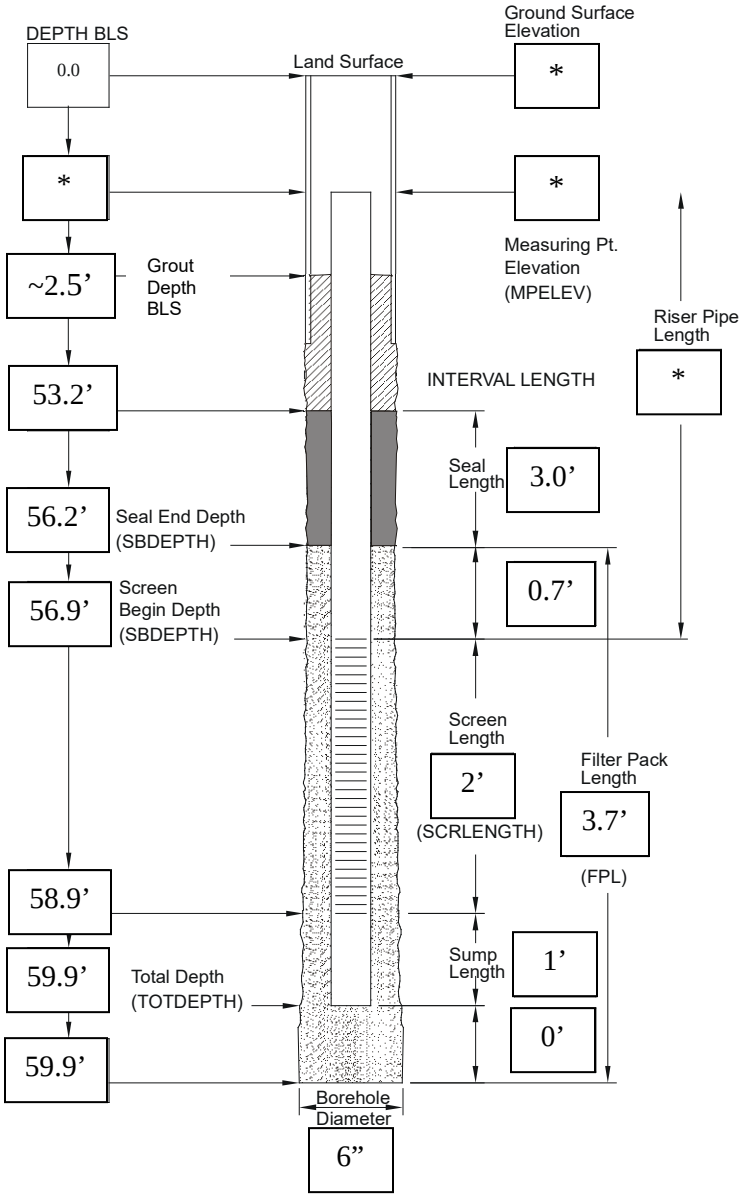
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW025
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/24/17
Type: Bentonite pellets
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

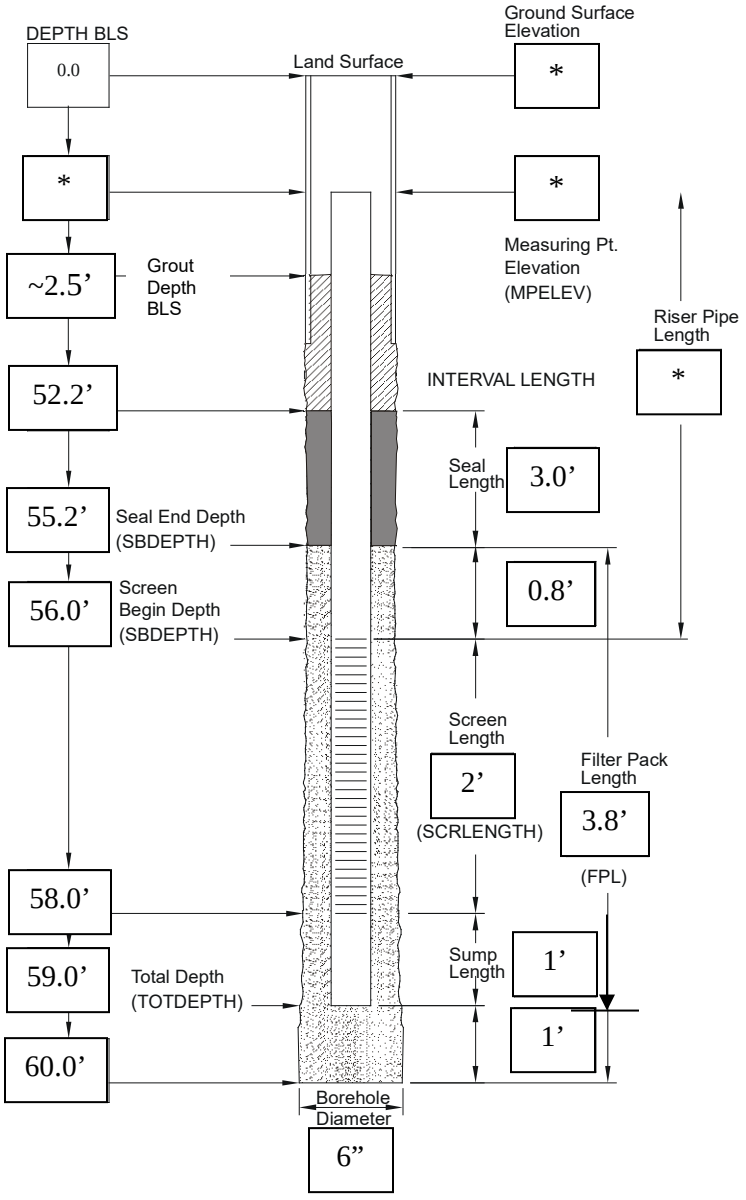
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW026
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/23/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/23/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and natural collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC
Screened 56'-58' due to sand/clay layer

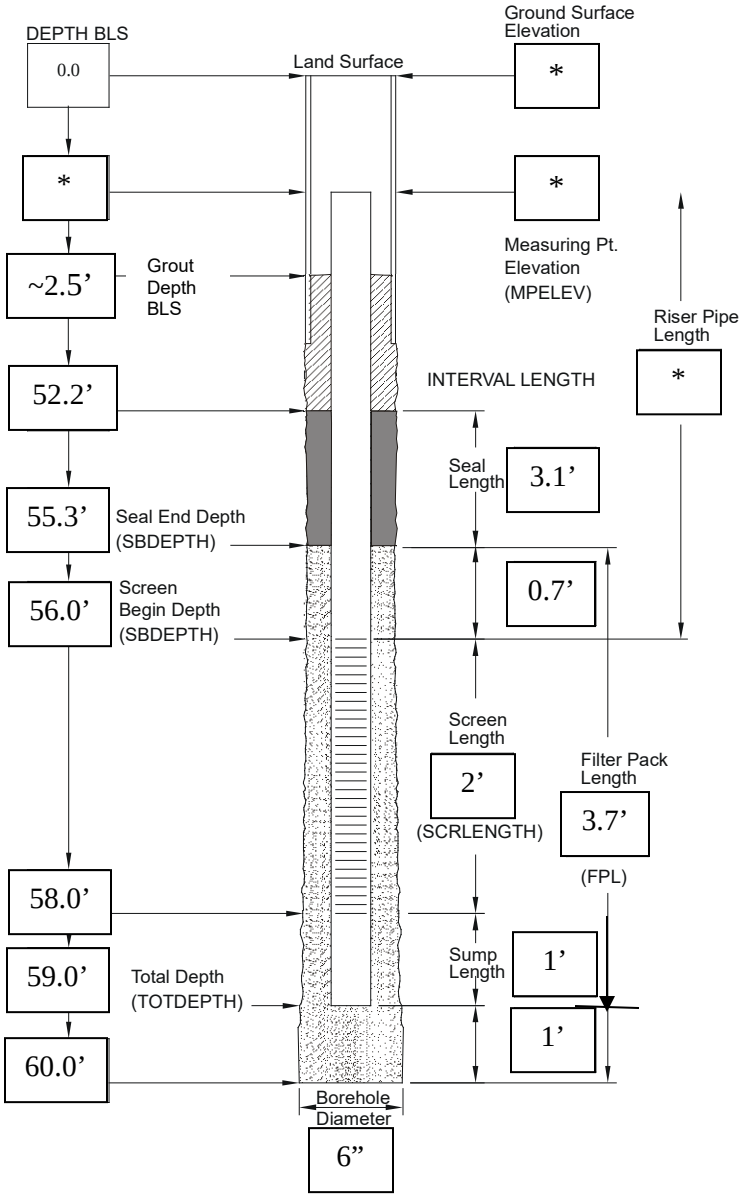
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW027
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/23/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/23/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
* FECC will complete ASWs
Screened 56'-58'

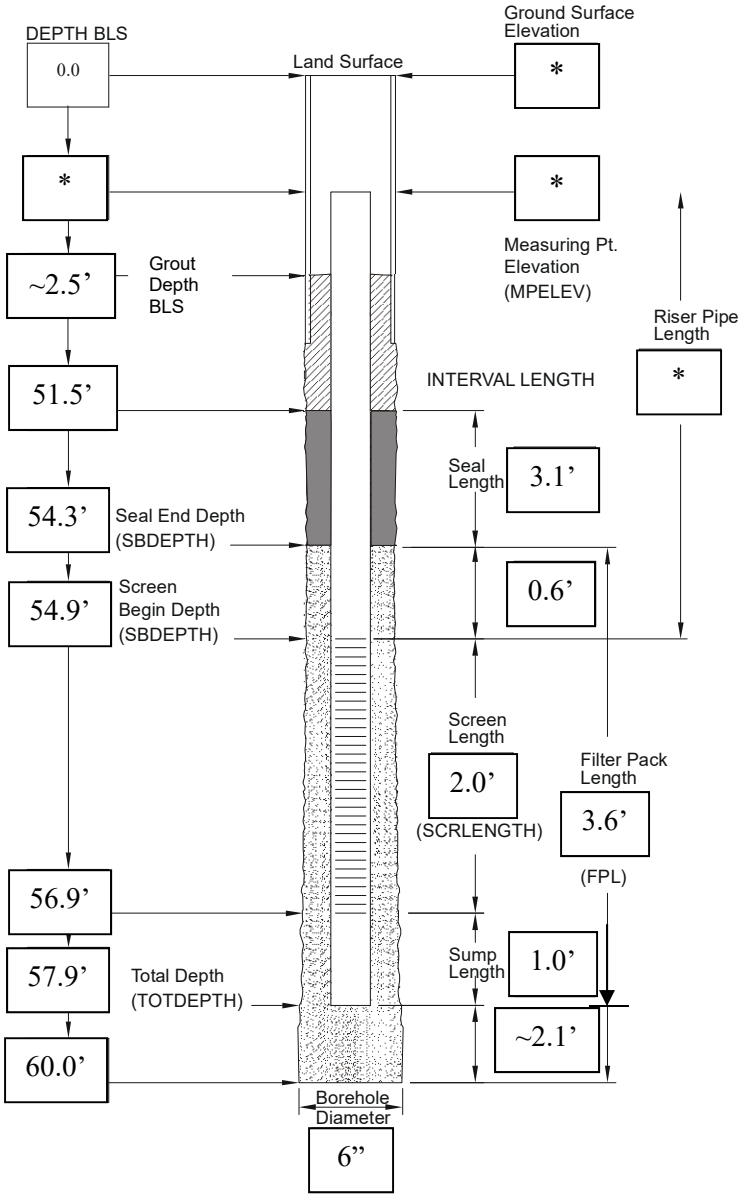
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW028
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/24/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and natural collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 55-57 ft BLS due to clayey lithology
(D. Sizemore selected screen interval)

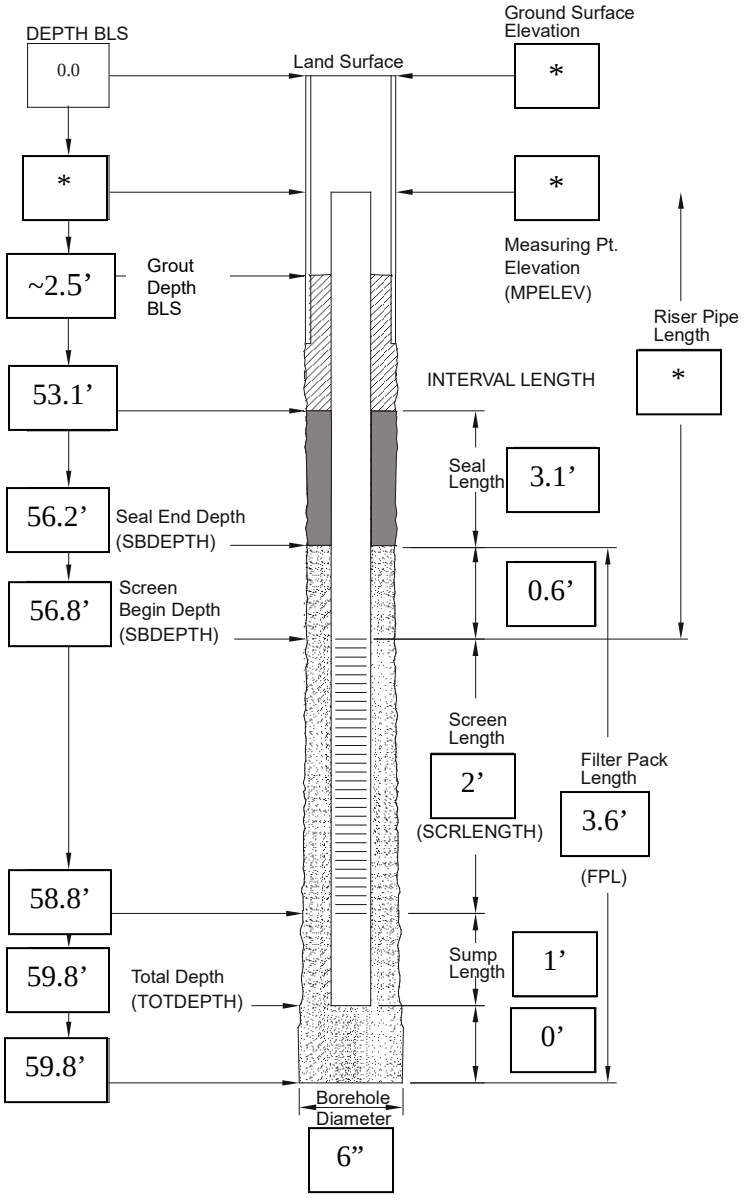
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW029
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/30/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/30/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~30 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

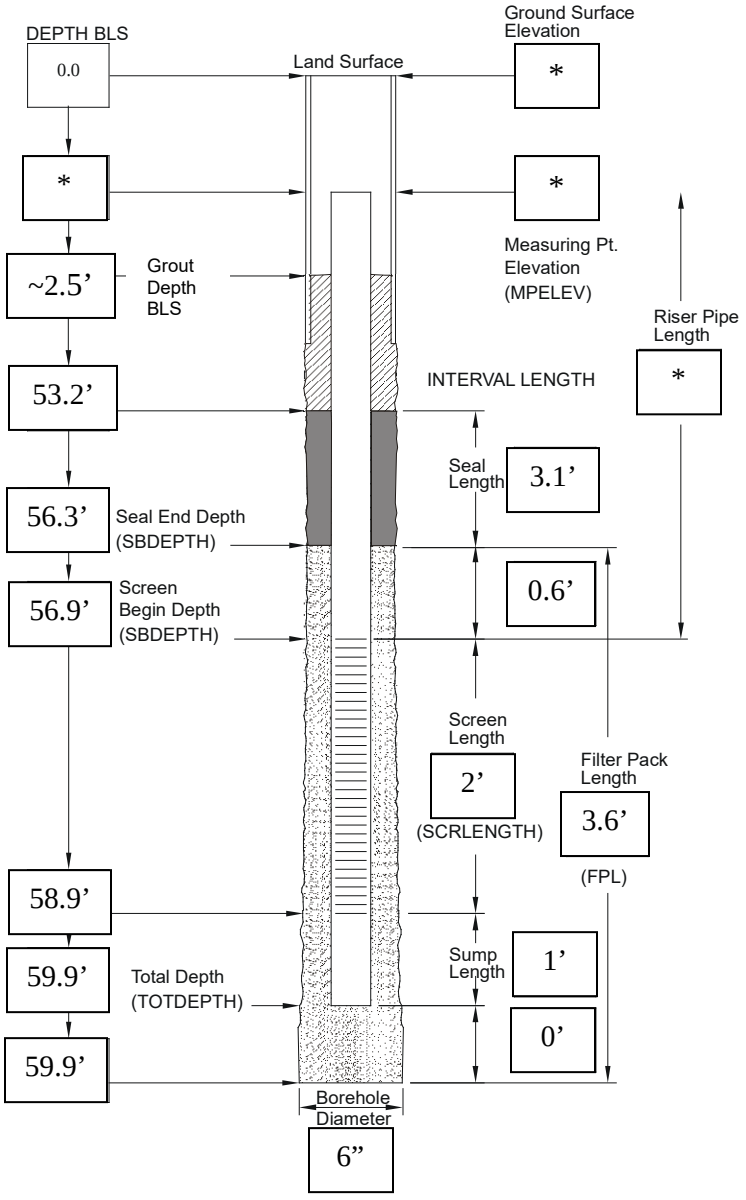
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW030
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/30/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

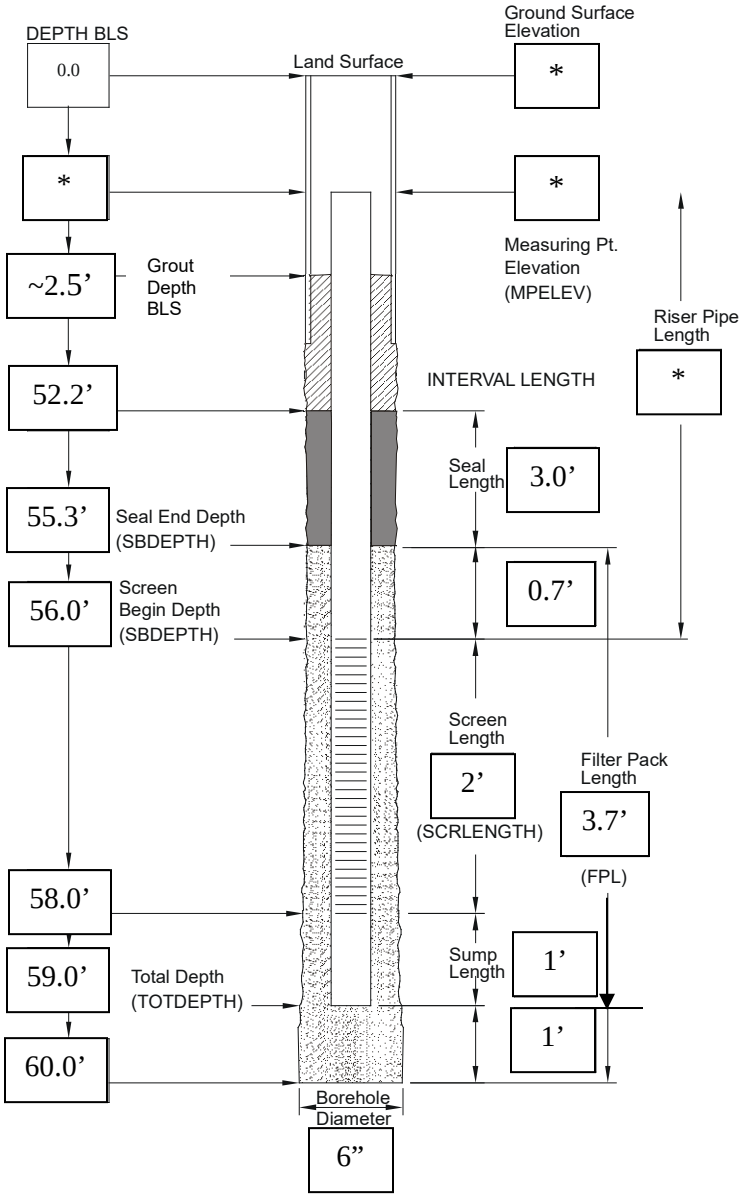
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW031
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/24/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 56-58 ft BLS due to sandy/clayey layer

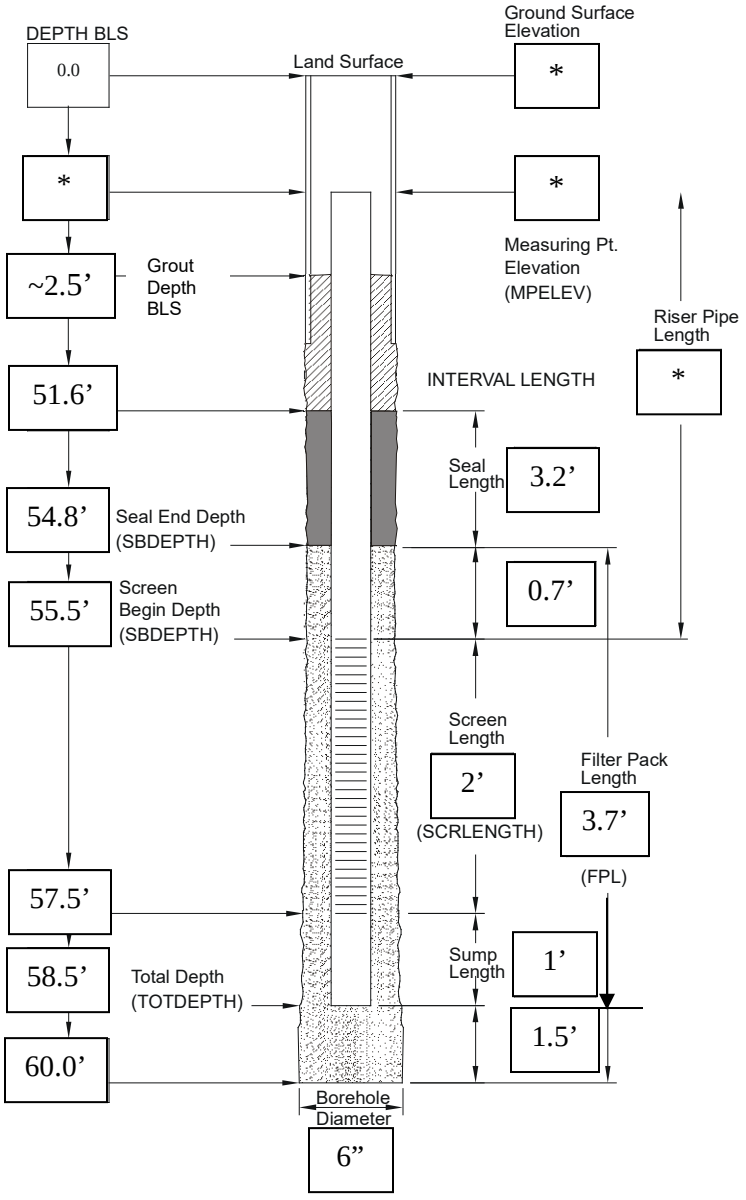
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW032
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/25/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 55.5'-57.5' ft BLS due to clay/sand lithology present 55.5'56.0' ft BLS

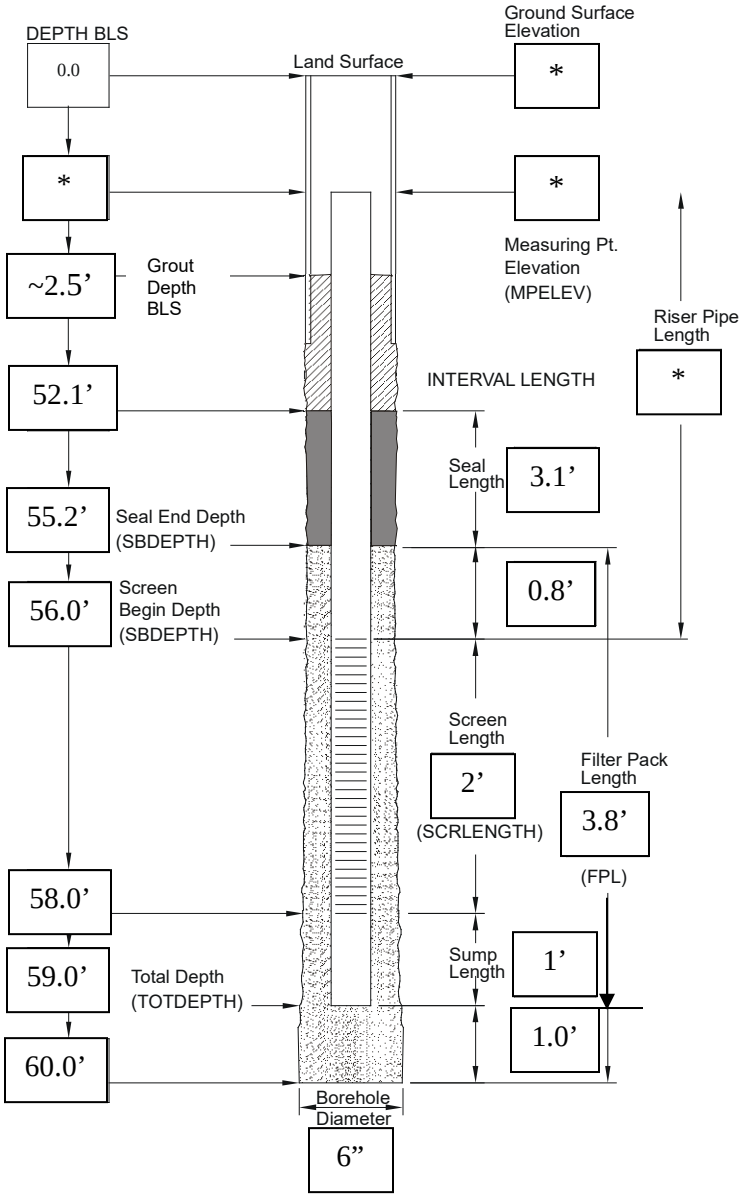
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW033
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/25/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 56-58 ft BLS due to clay/sand at 56.5 ft BLS

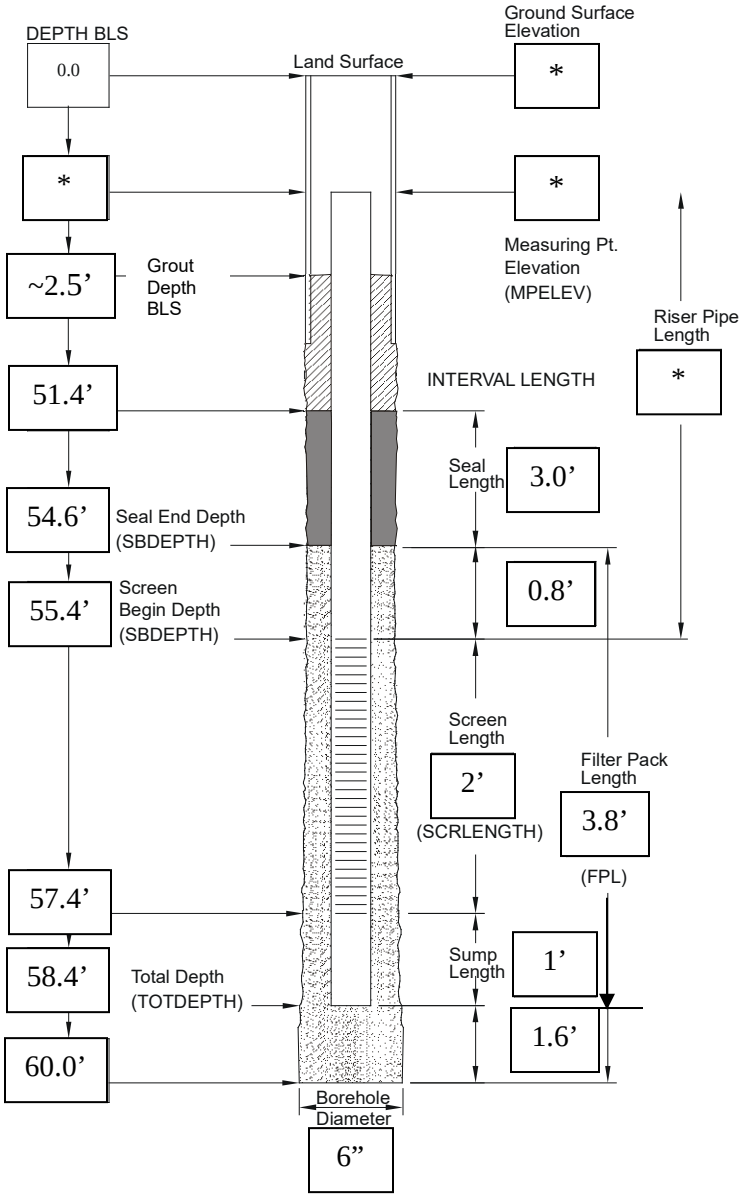
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW034
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/25/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screen set at 56-58 ft BLS due to clayey sand layer at 57.5 ft BLS
Screen interval and total depth altered after confirmation measurement in field

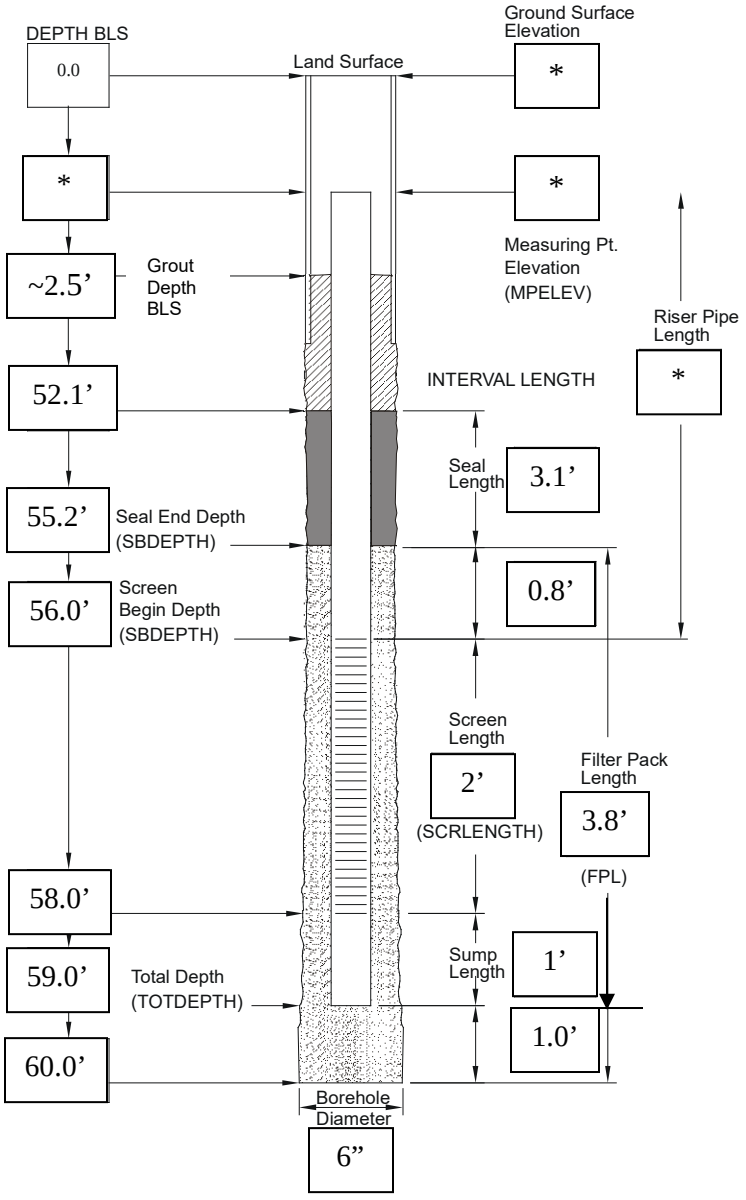
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW035
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/25/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~45 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 56'-58' BLS to place screen above (partially) clayey/sand at 57.25' BLS

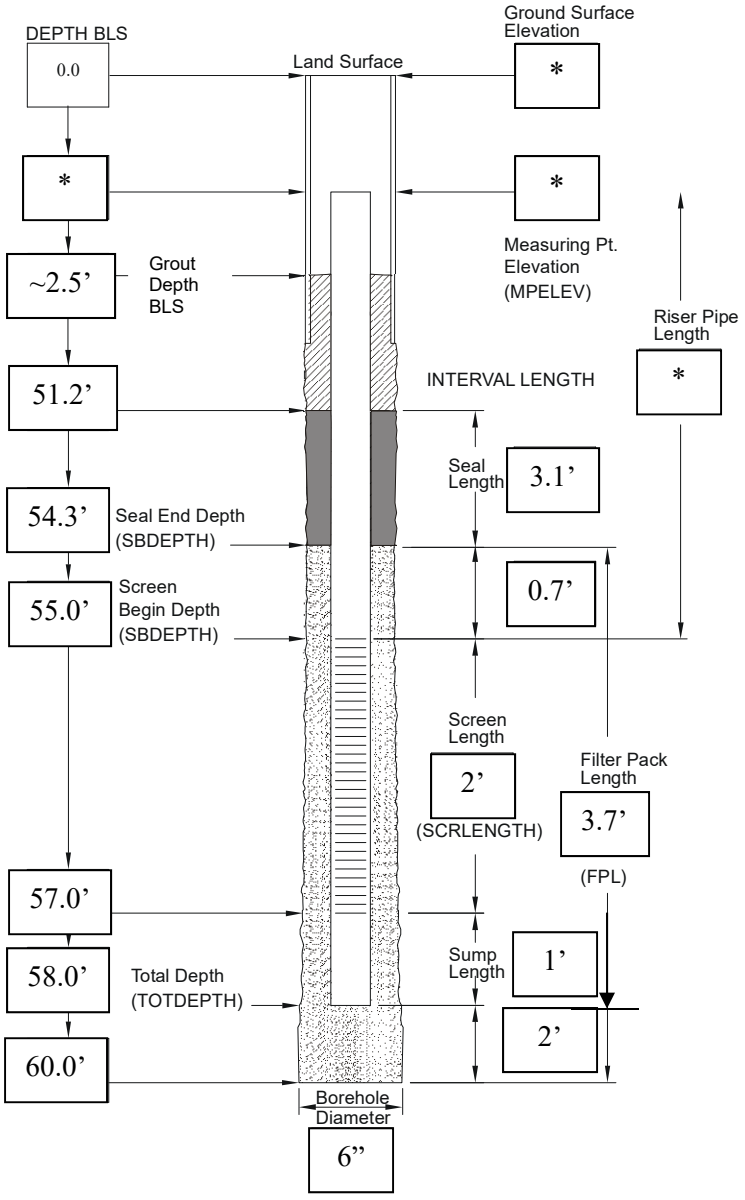
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW036
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/25/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 55-57 ft BLS due to clay at 57.5 ft BLS

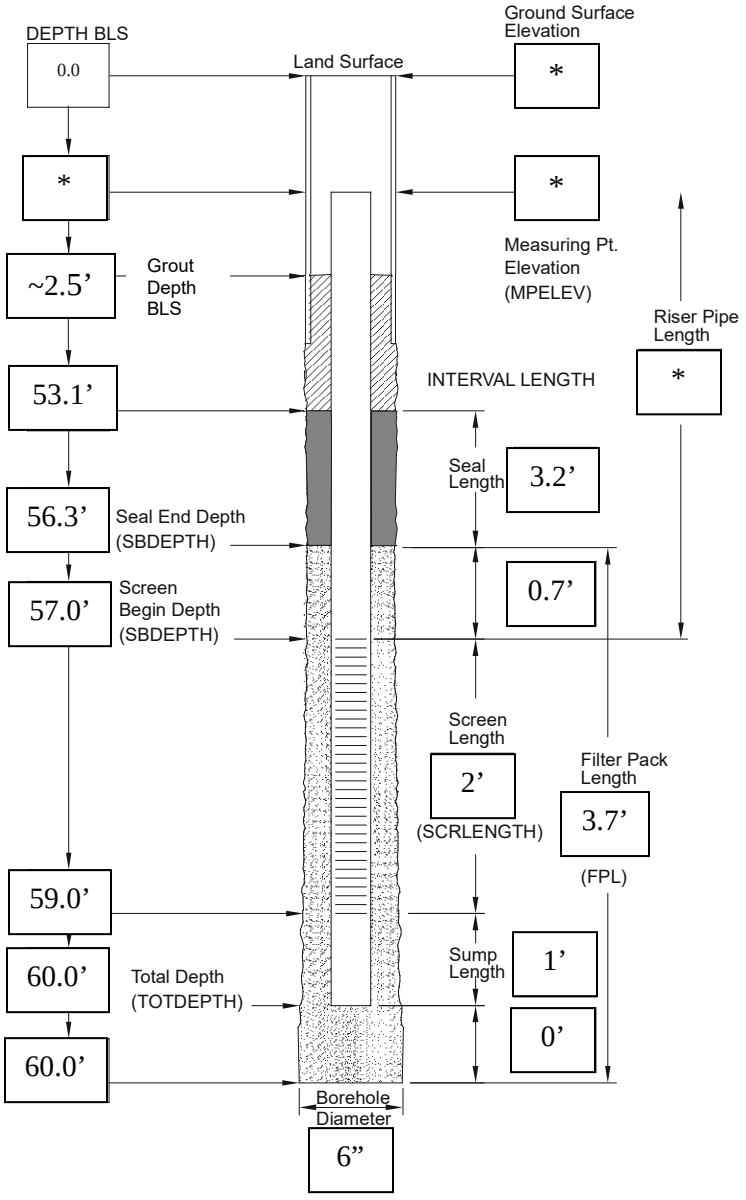
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW037
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/2/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

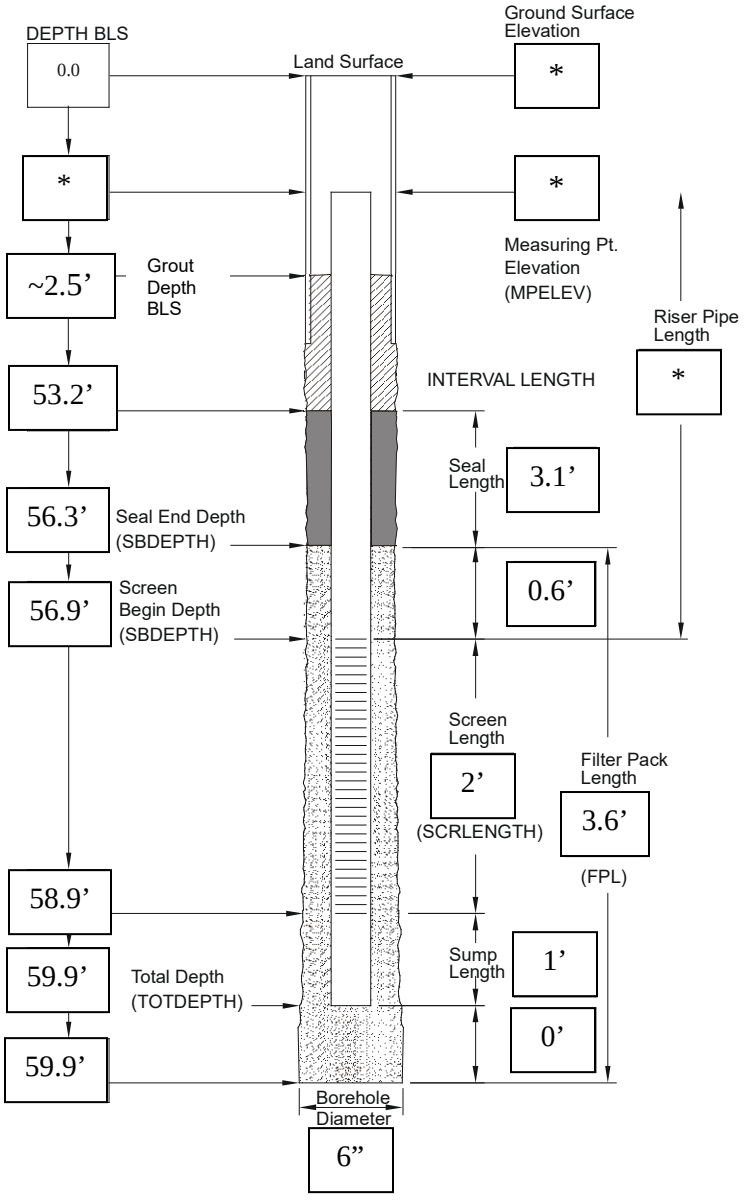
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW038
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/30/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASWs

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/30/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

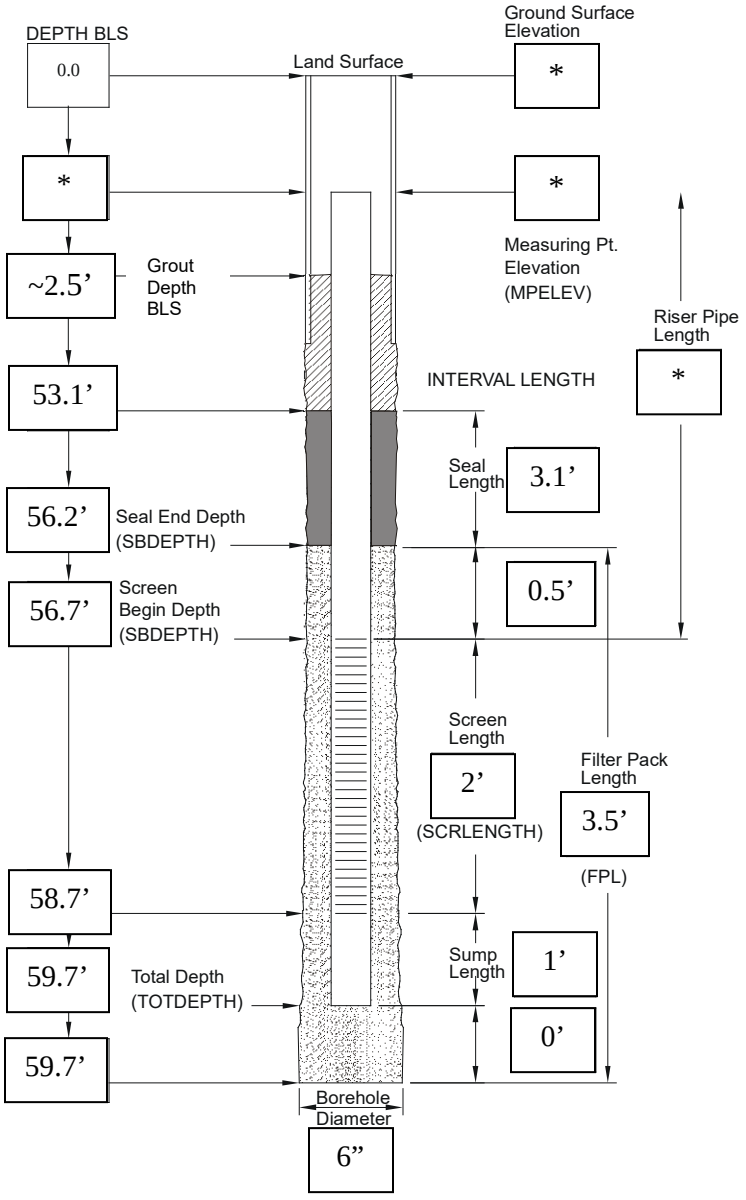
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW039
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/30/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/30/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

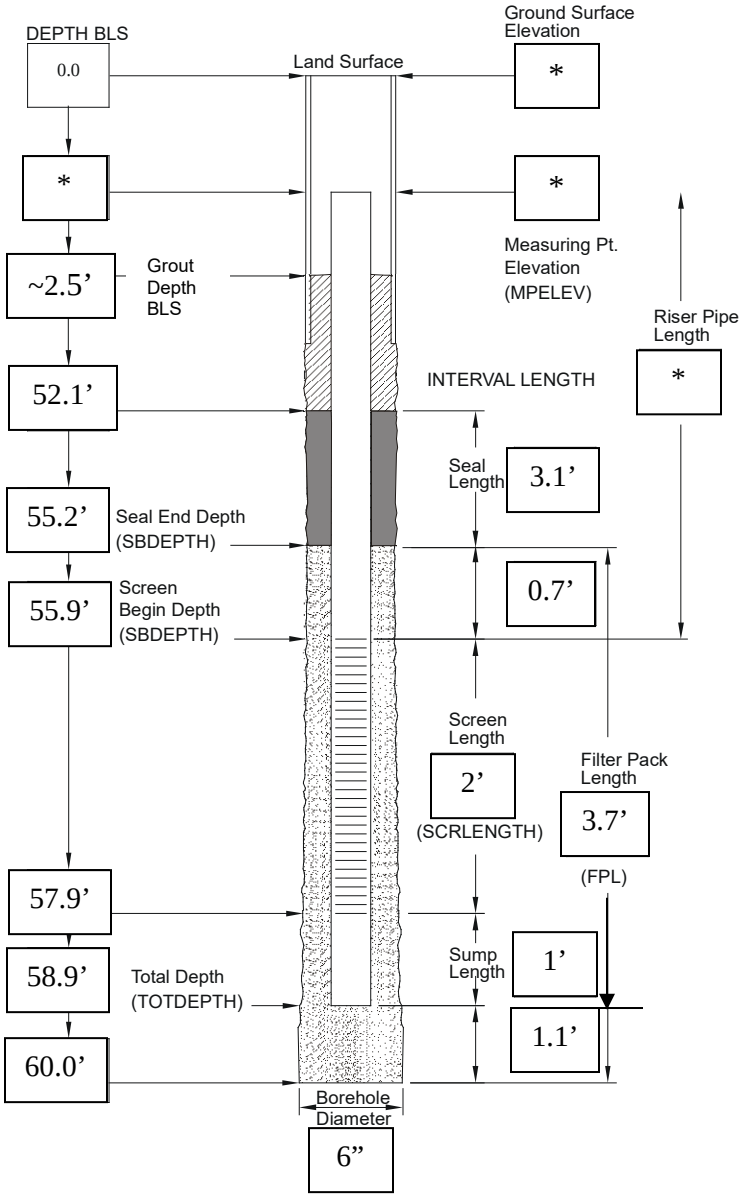
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW040
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/27/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/27/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 56'-58' BLS to intersect sand layers with screens

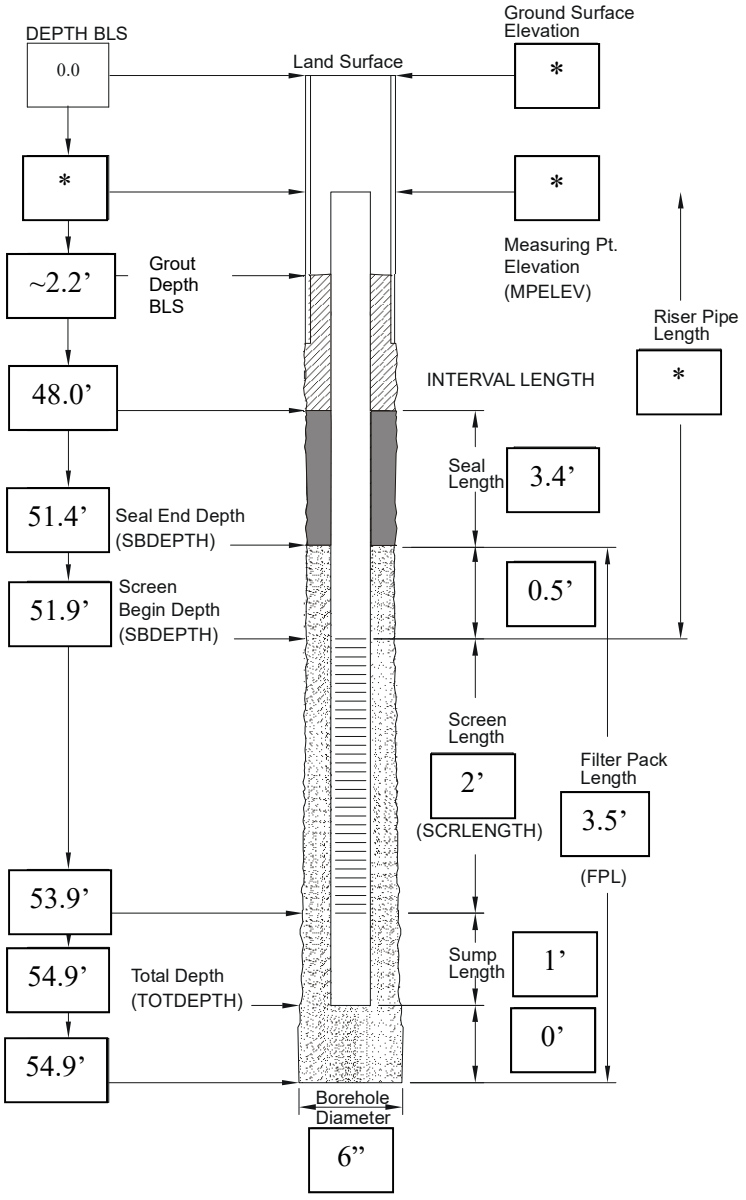
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW041
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore`

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/12/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Included in CCR

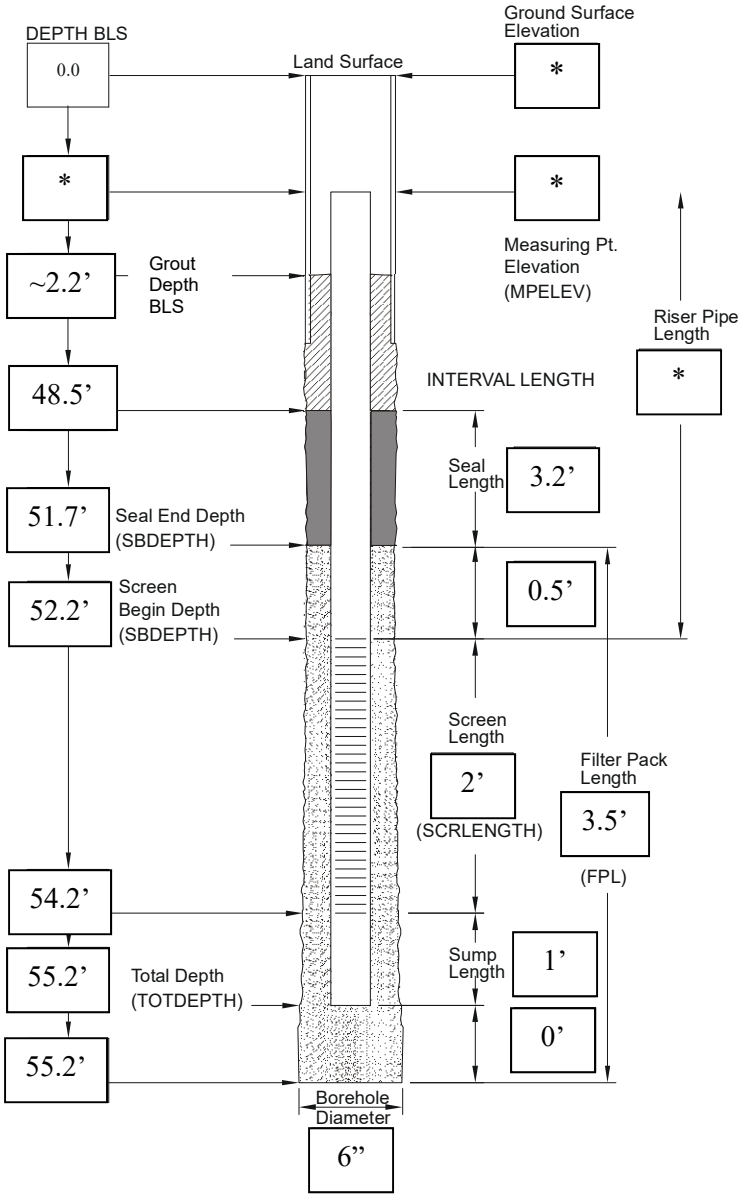
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW042
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/12/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Included in CCR

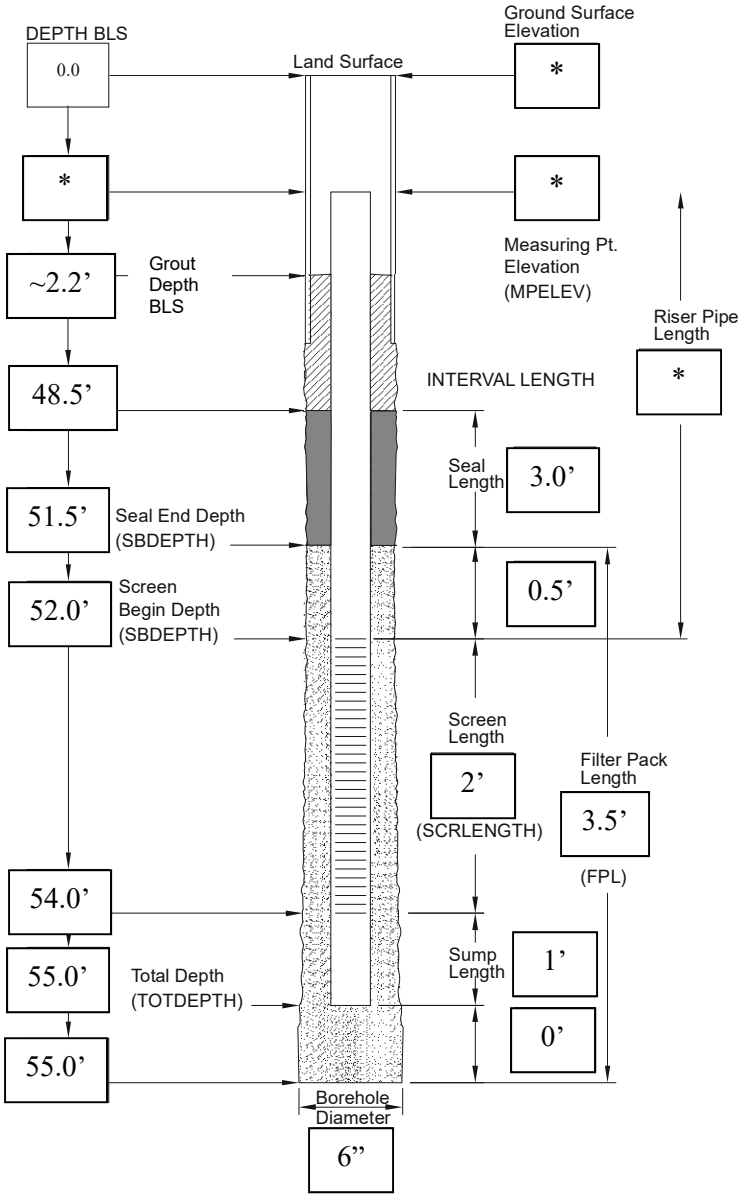
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW043
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/12/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

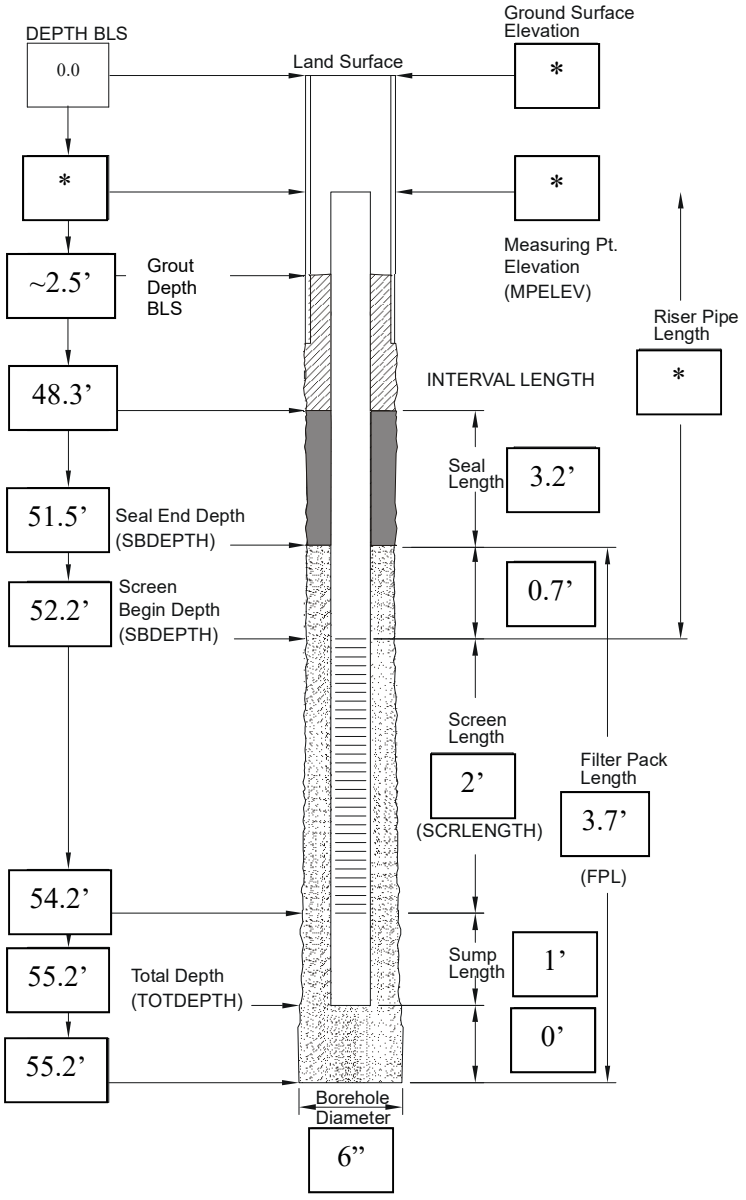
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW044
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/16/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 25 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be completed by FECC

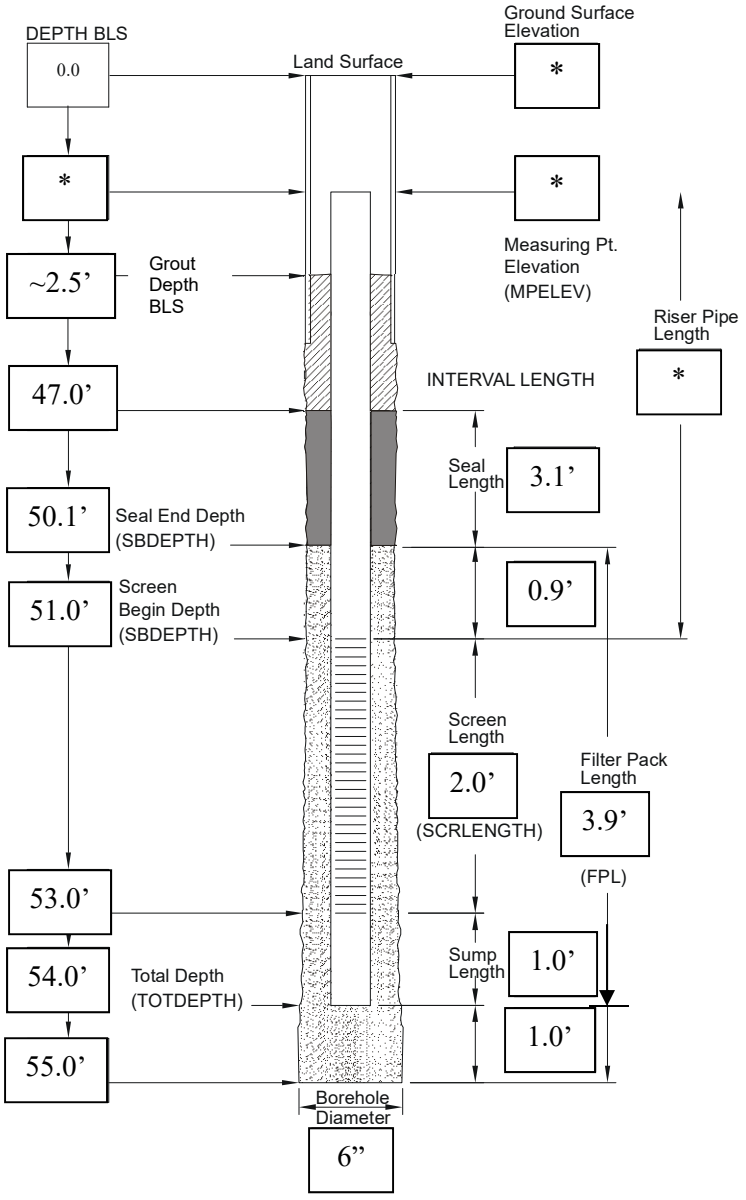
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW045
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/17/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completions done by FECC
Well installed with screen 51-53 ft BLS due to clay observed at 52 ft BLS

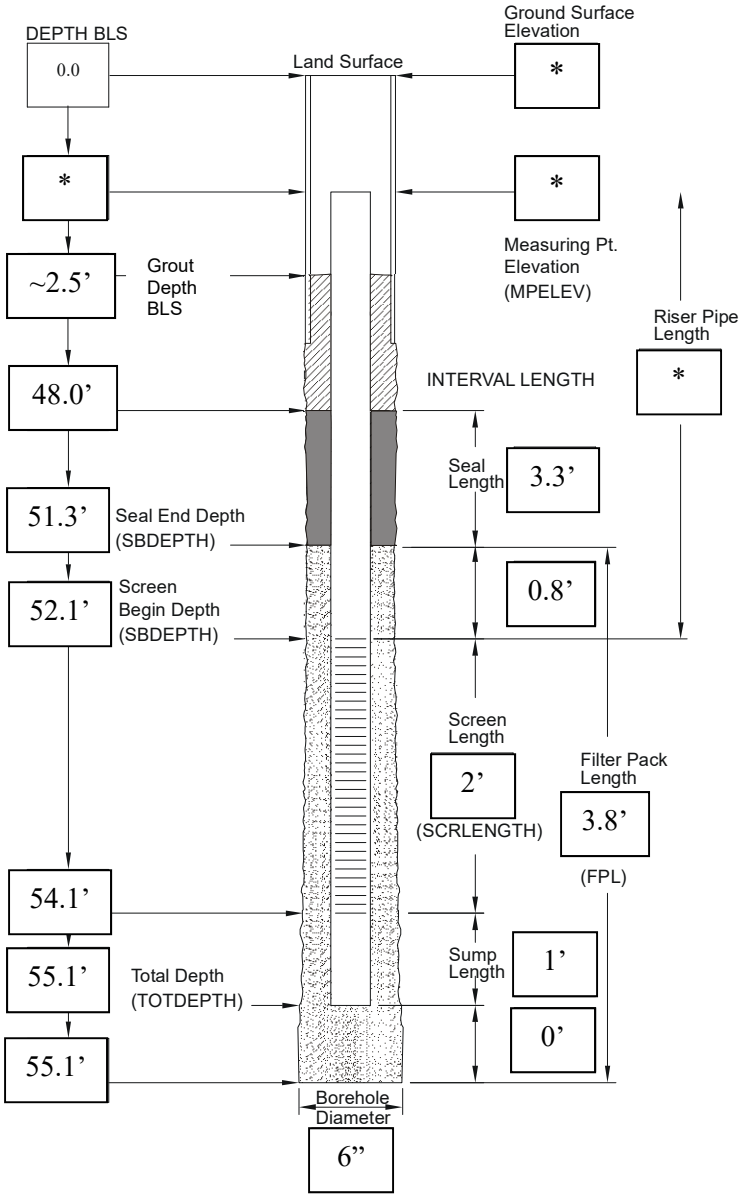
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW046
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/18/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/18/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~75 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completions to be done by FECC

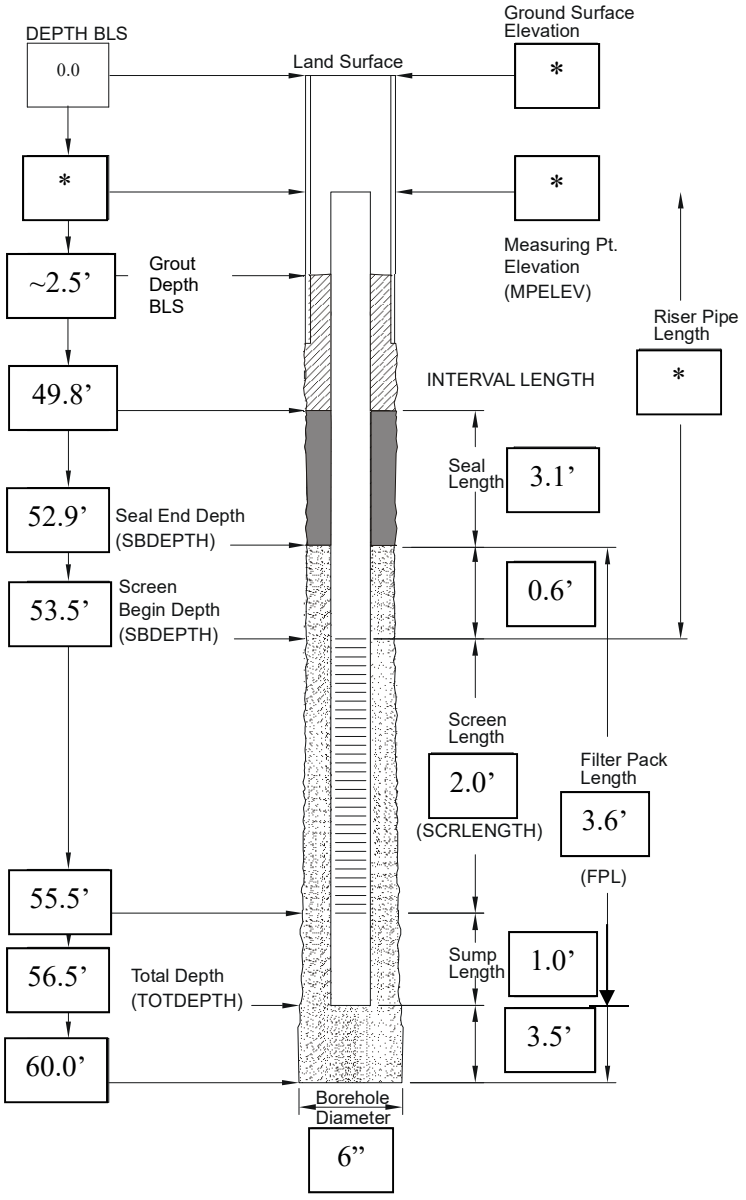
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW047
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/19/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: Overnight
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will do completions
Depth of screen changed to 52.5'-55.5' due to clayey/sand lithology observed at top of boring (55-60 ft BLS)

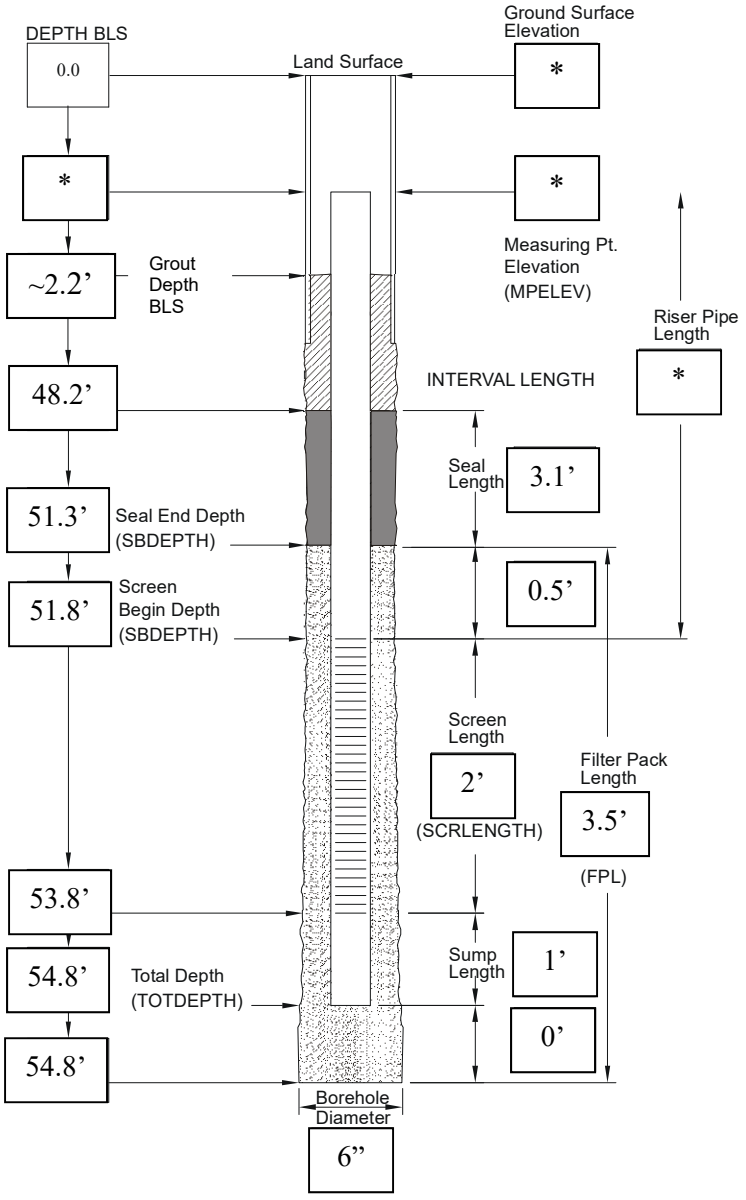
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW048
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/11/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/11/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Included in CCR

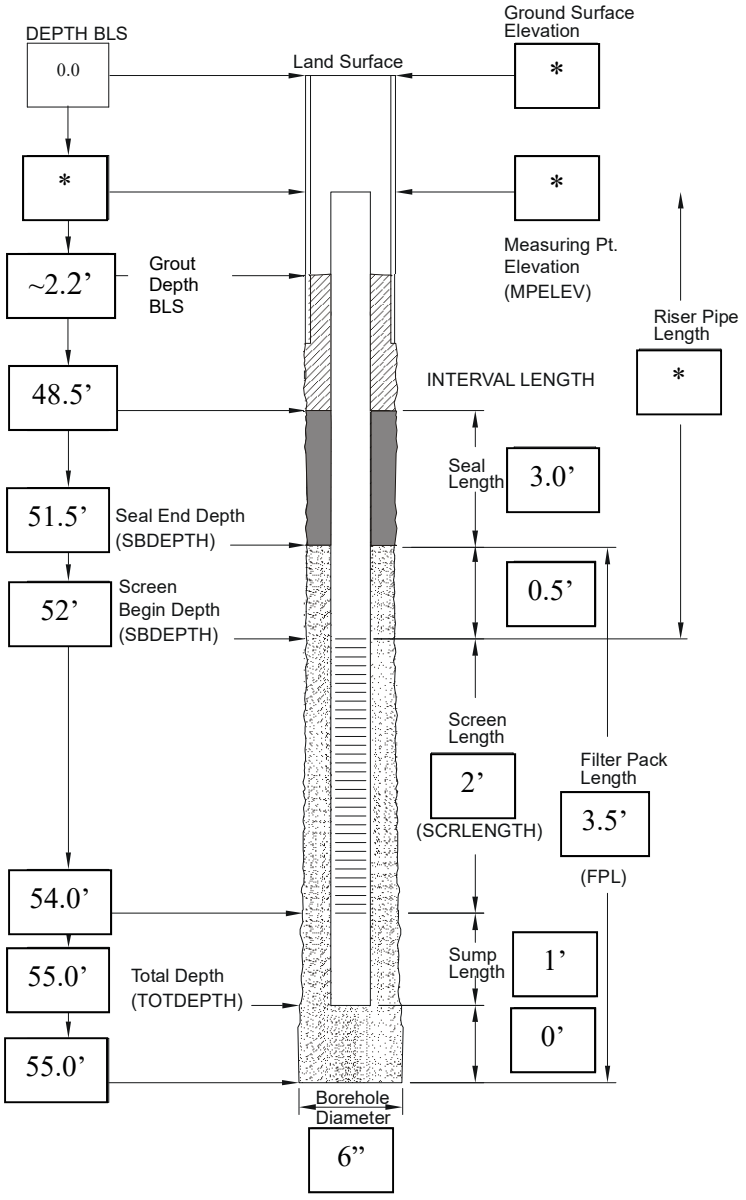
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW049
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/11/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/11/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Included in CCR

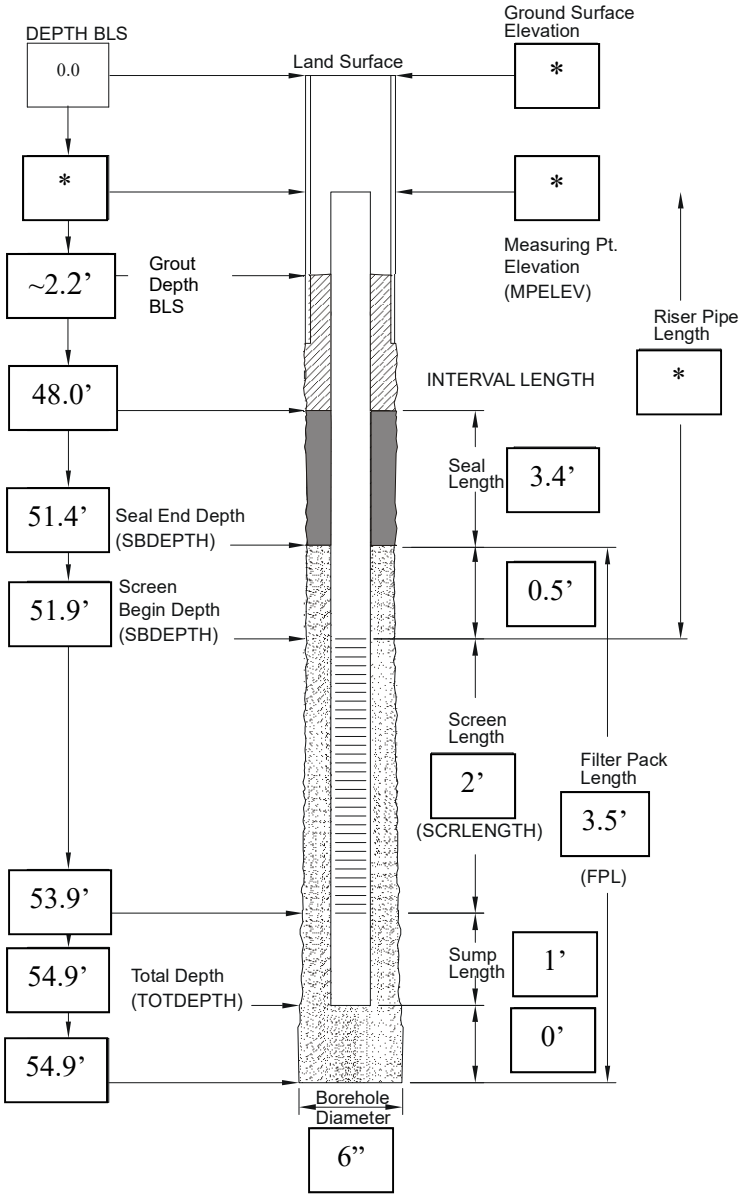
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW050
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/11/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/11/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be included in CCR

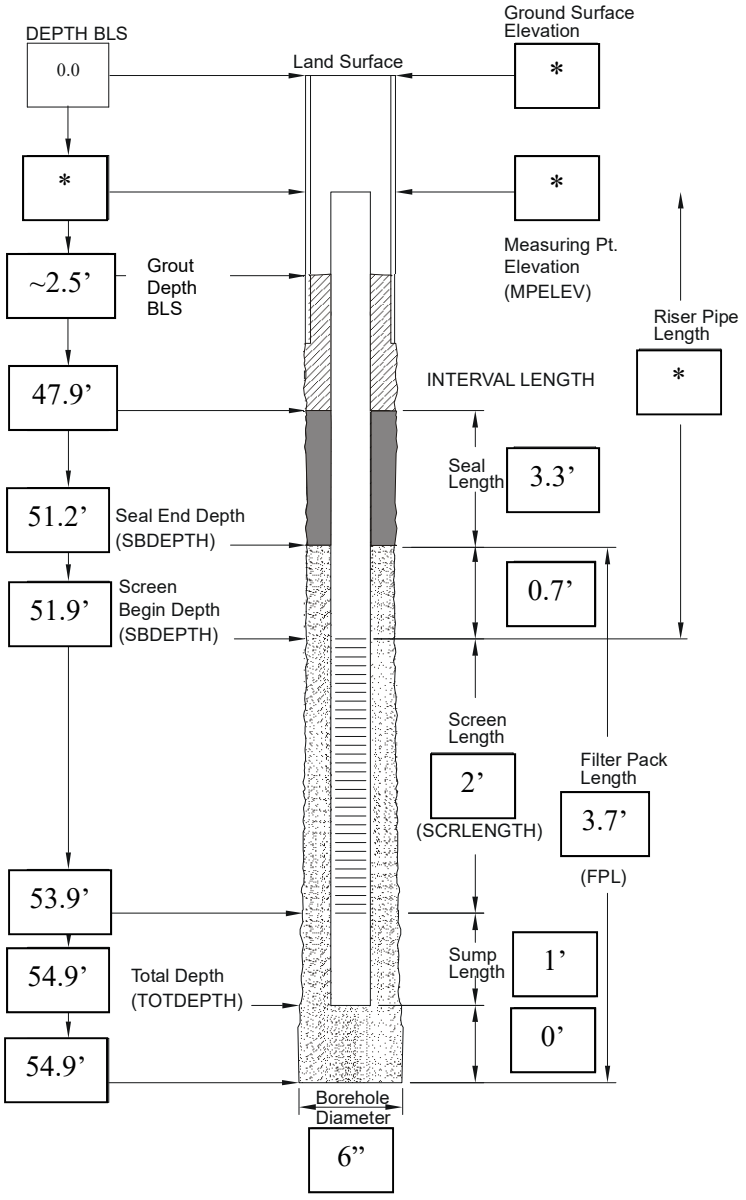
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW051
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/17/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~45 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completions to be done by FECC

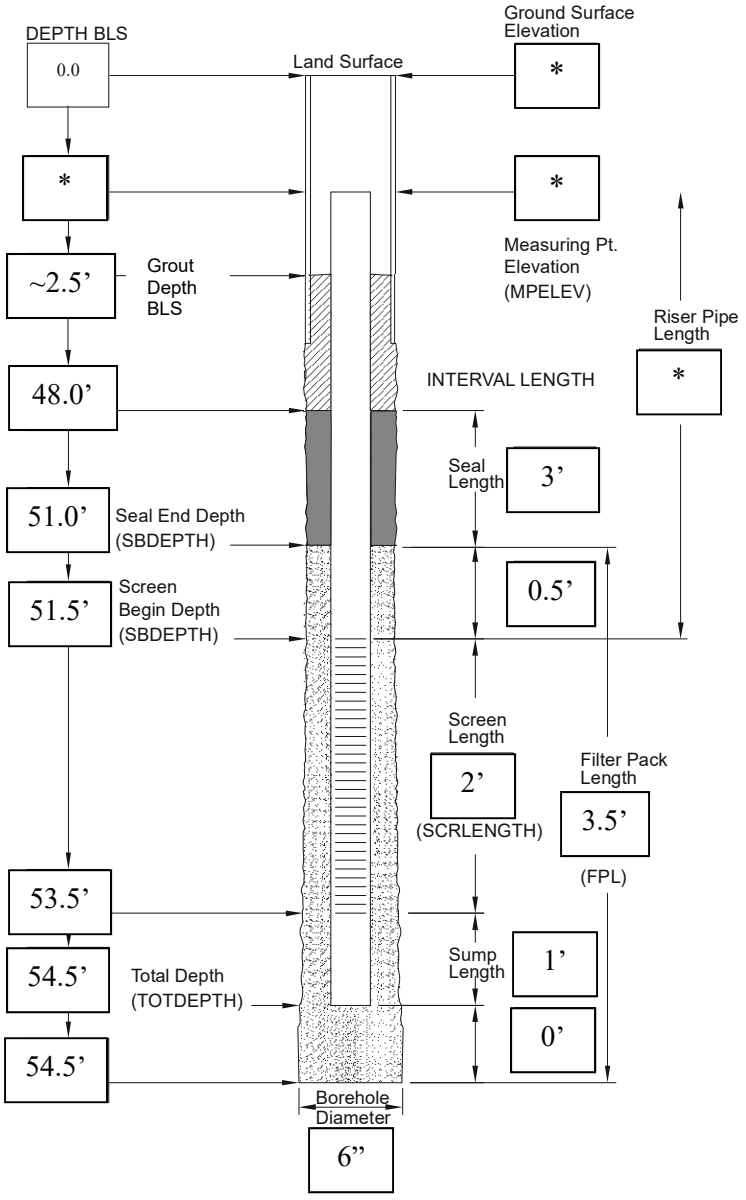
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW052
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/17/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completions to be done by FECC
Installed shallower due to clay present ~54 ft BLS

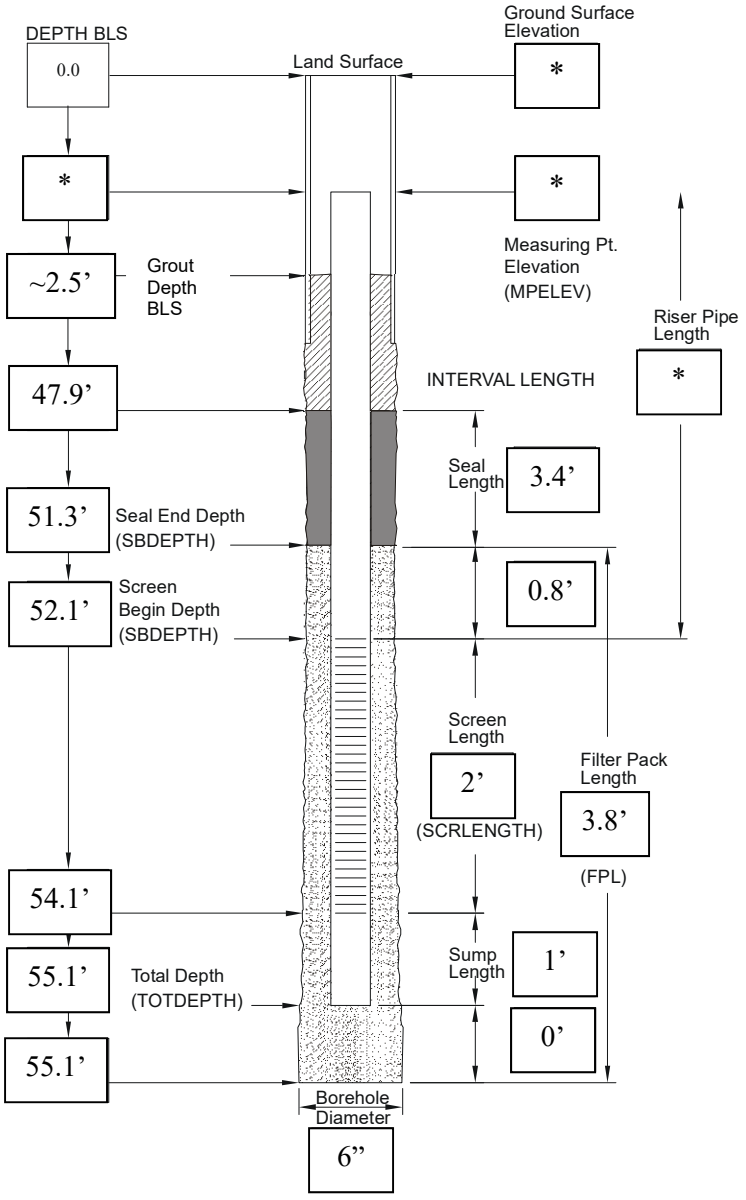
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW053
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/18/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/18/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completions to be done by FECC

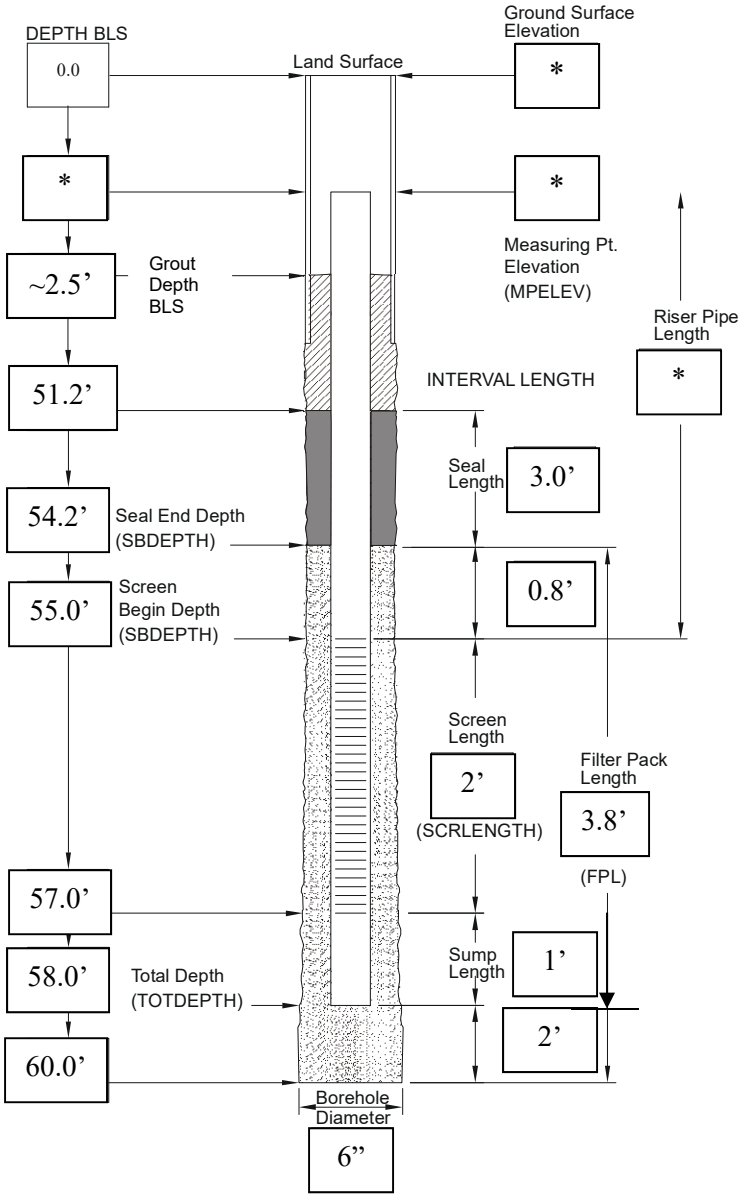
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW054
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/25/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
Screened 55'-57' due to clay lamination layer present to 55.5' BLS
*FECC to complete ASWs

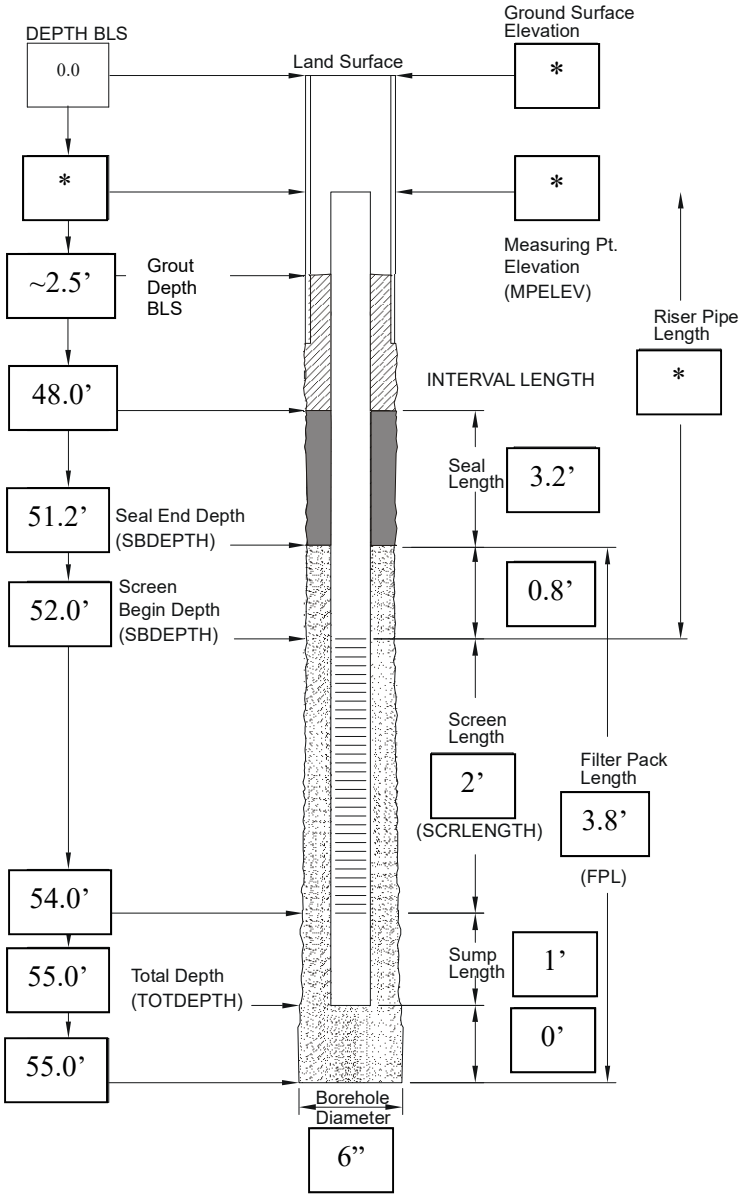
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW055
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/17/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: Overnight
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completions to be done by FECC

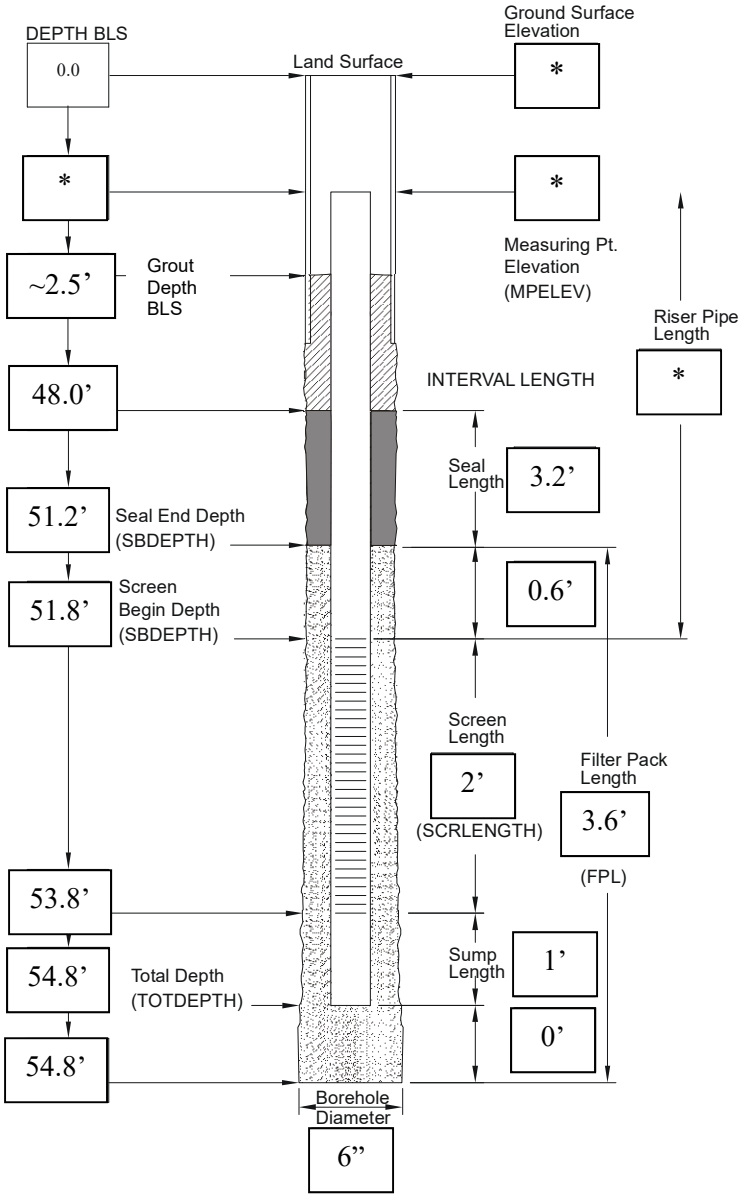
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW056
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/17/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well completions to be completed by FECC
Well pulled up a few inches while removing casing during filter pack placement

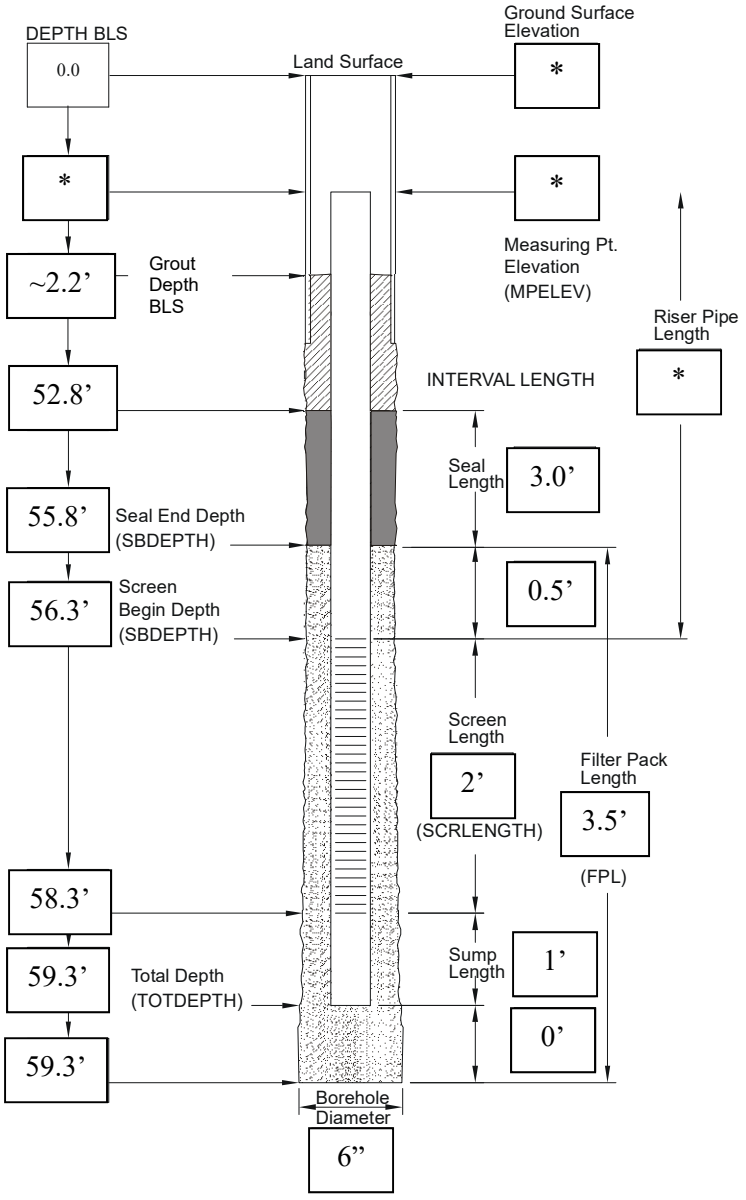
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW057
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/11/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/11/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

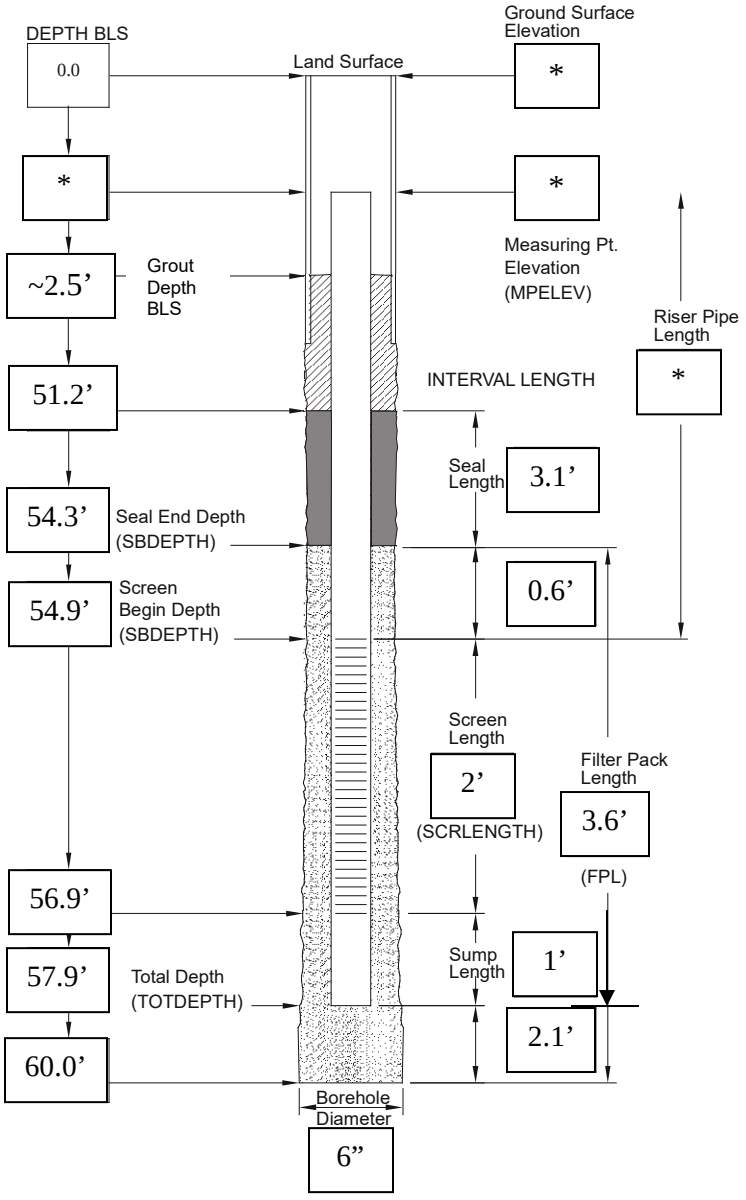
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW058
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/26/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: Overnight
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 55-57 ft BLS

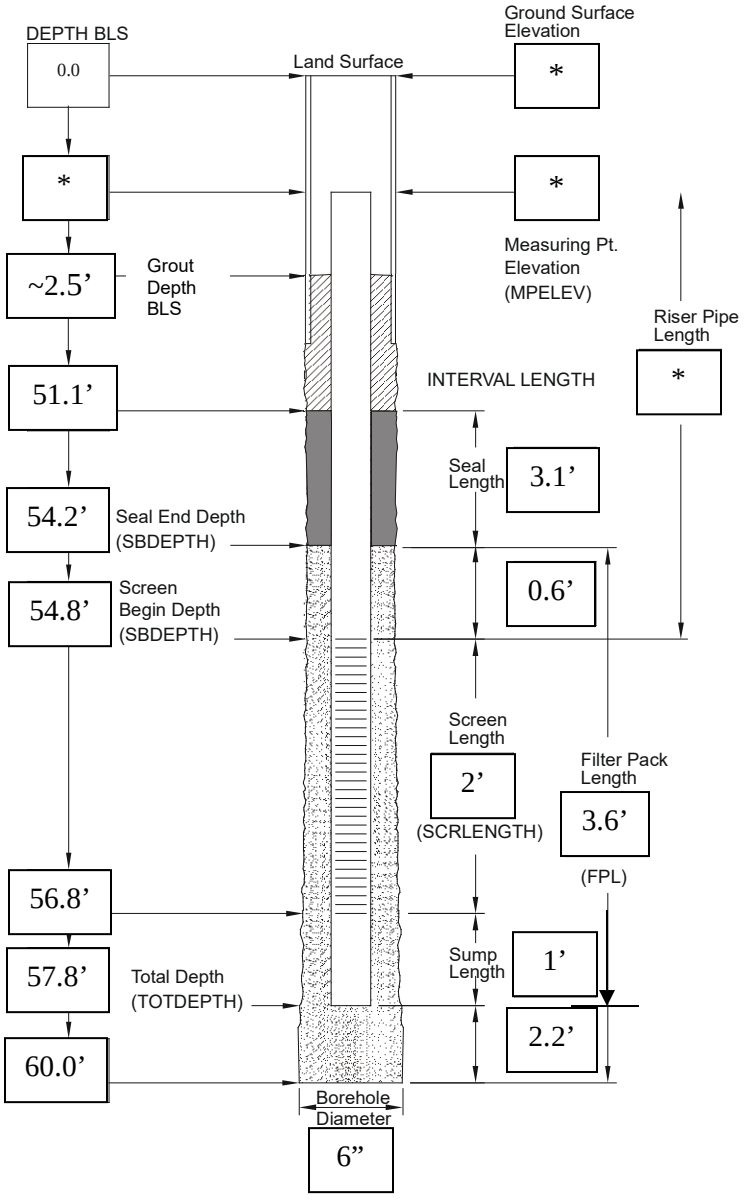
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW059
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/26/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 55-57 ft BLS due to clay/sand lithology (screen and filter packs intercept sand layers)

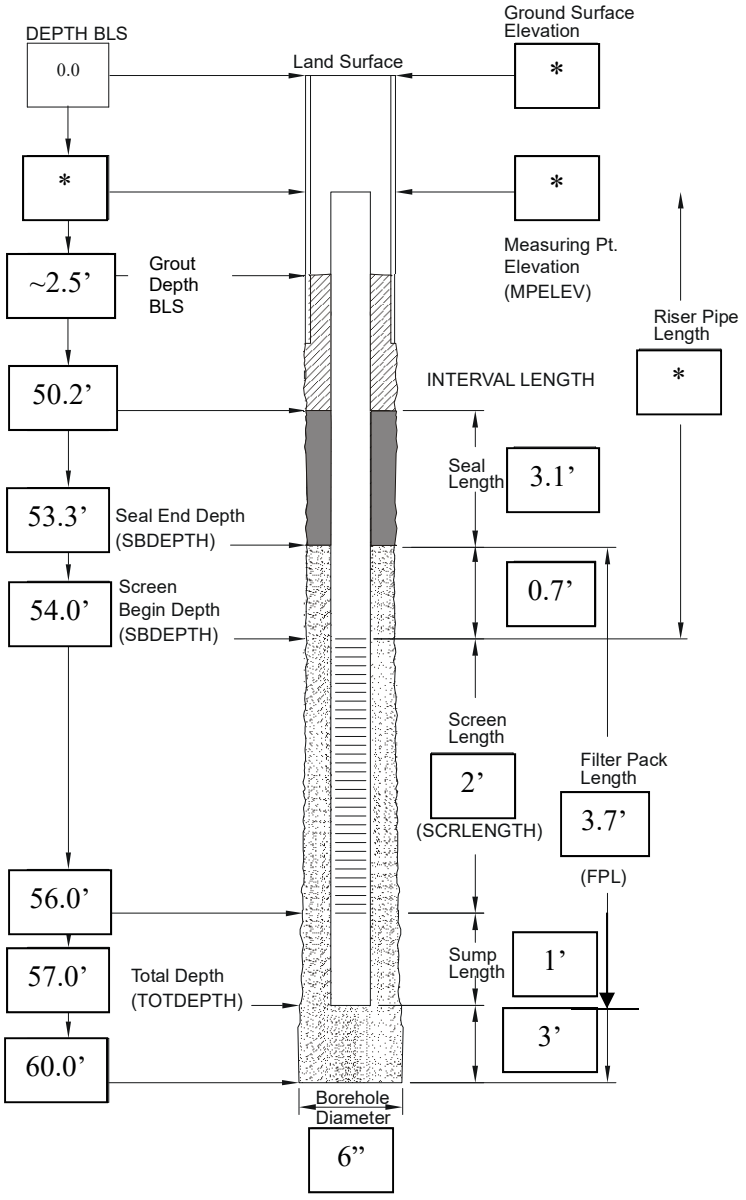
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW060
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
Screened 54'-56' due to presence of clay, but keep top of screen below 54 ft BLS
*FECC to complete ASWs

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/26/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

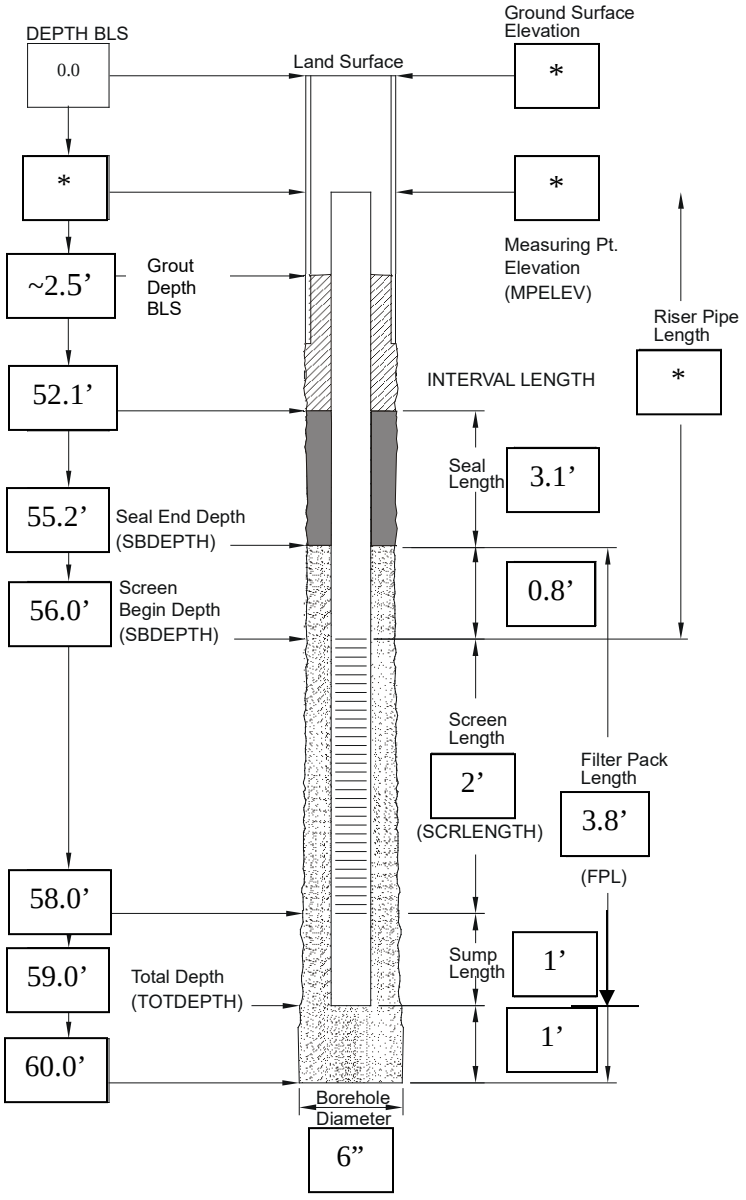
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW061
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/26/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 56'-58' BLS due to clayey sandy layer at 58' BLS

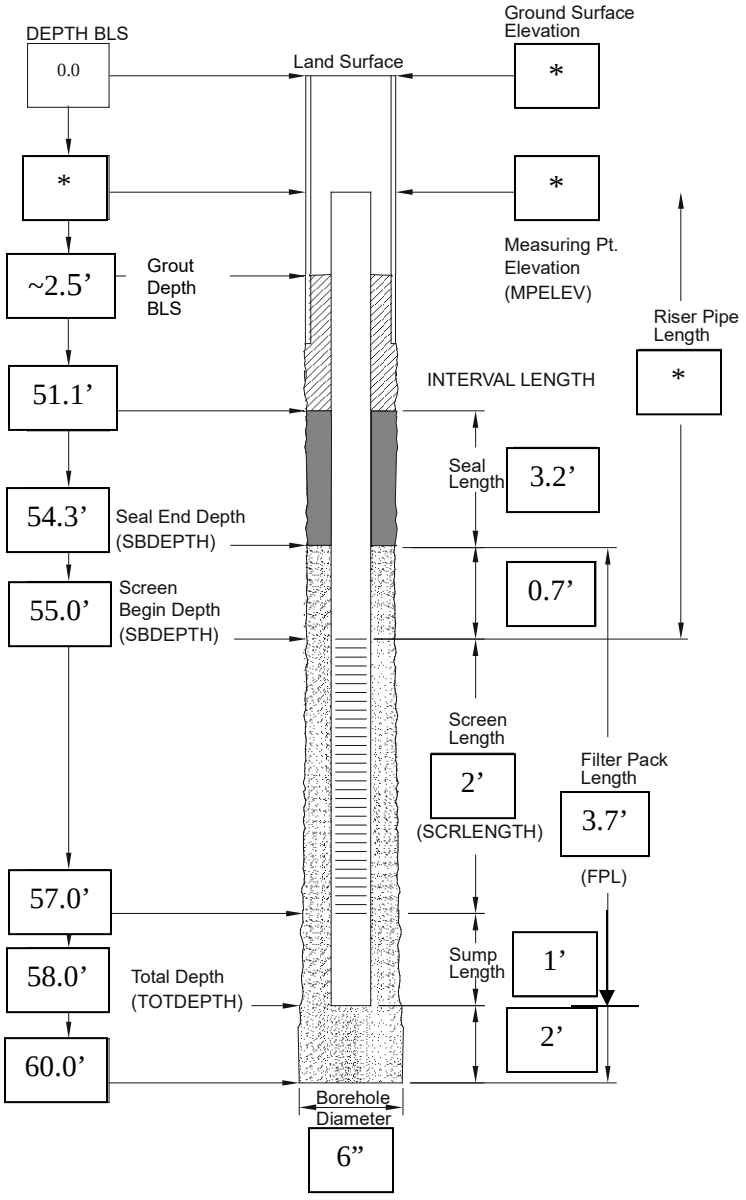
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW062
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/26/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~45 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and natural collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Well screened 55-57 ft BLS due to clay/sand layers

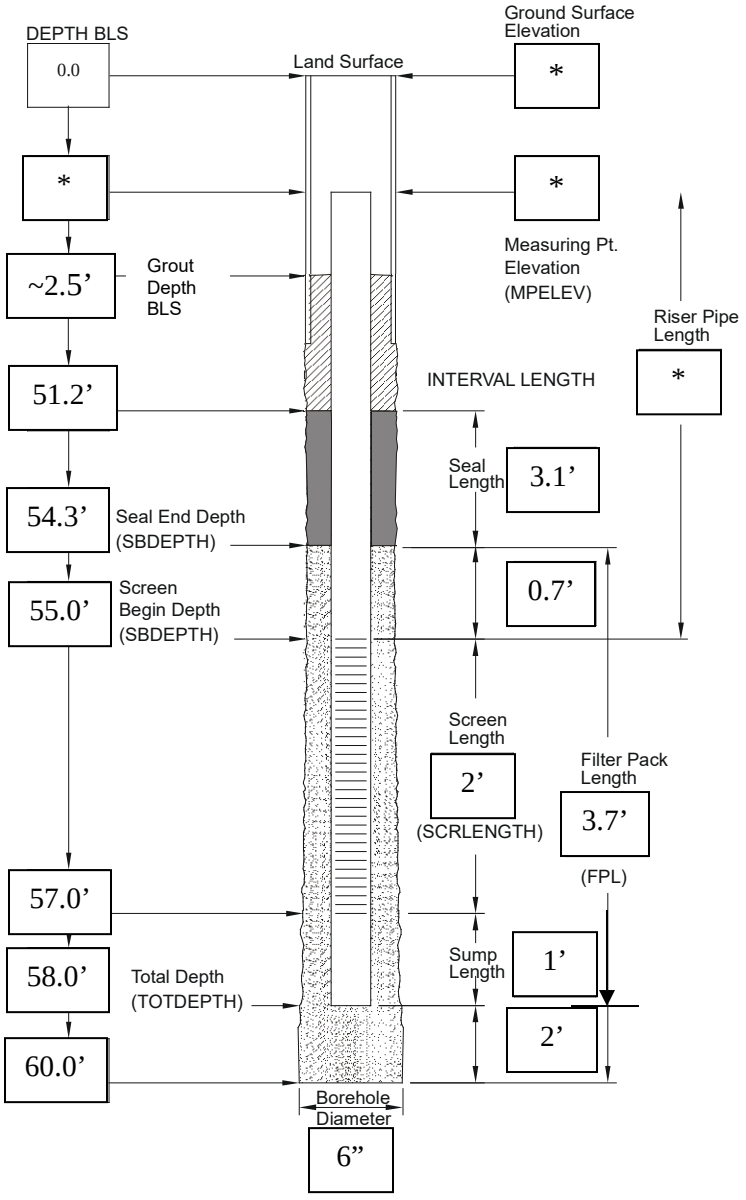
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW063
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/26/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 55-57 ft BLS due to clay/sand layers (screen/filter pack intercept sand layers)

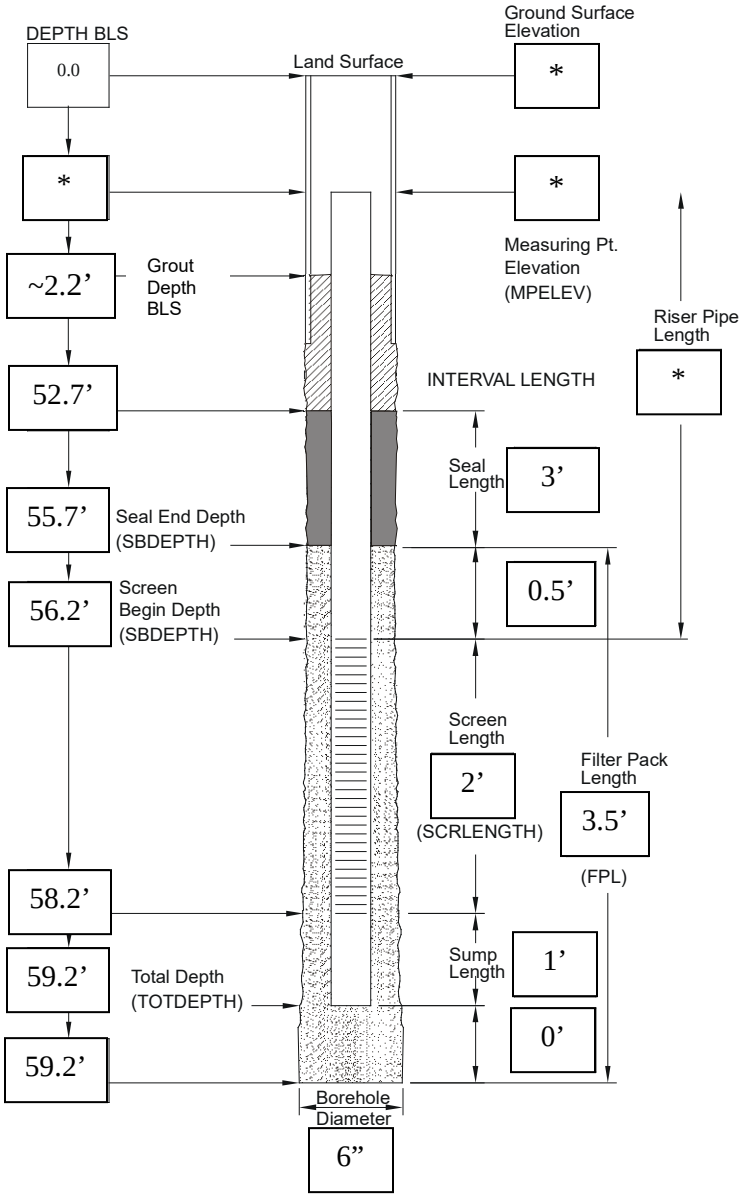
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW064
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/30/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/30/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR
Screen interval and total depth altered after confirmation measurement in field

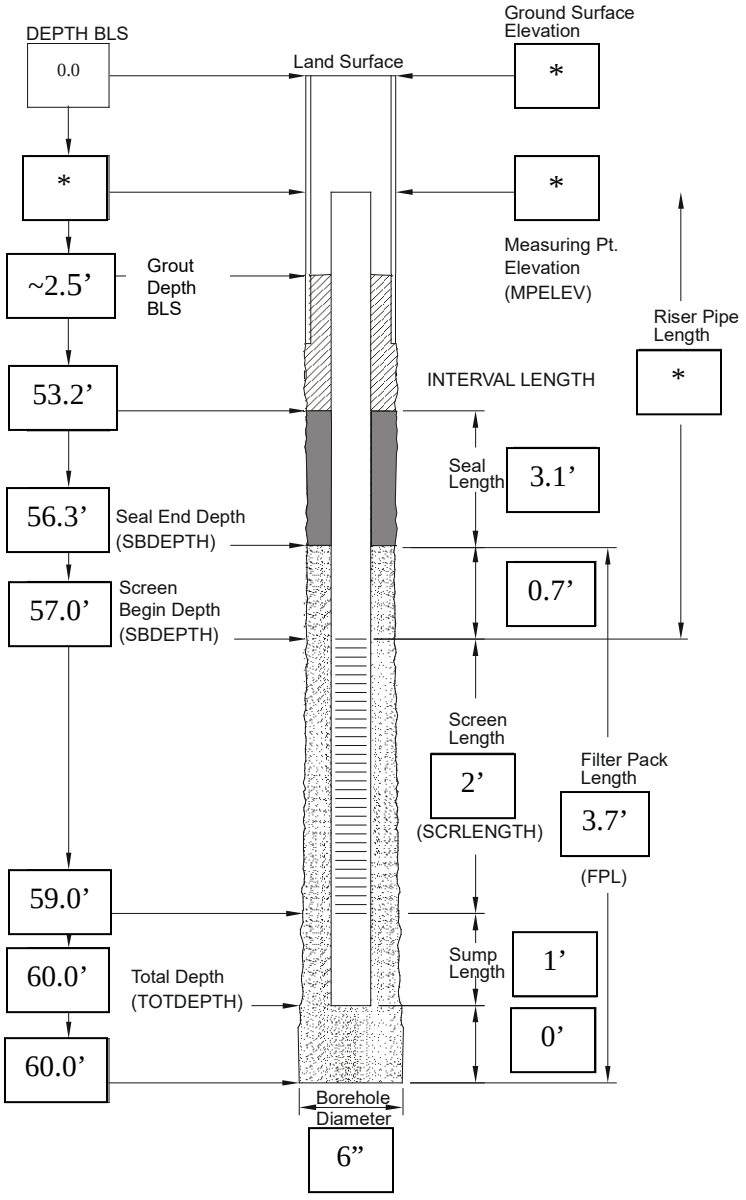
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW065
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/3/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/3/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

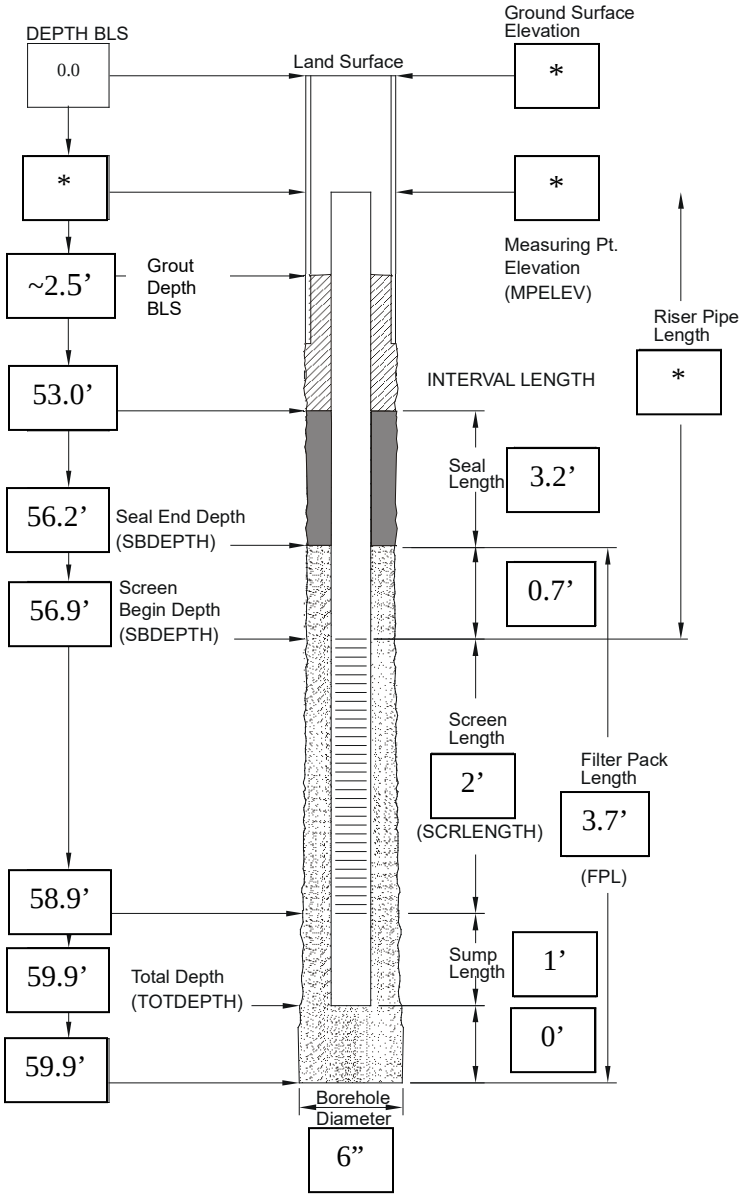
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW066
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASWs

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/2/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

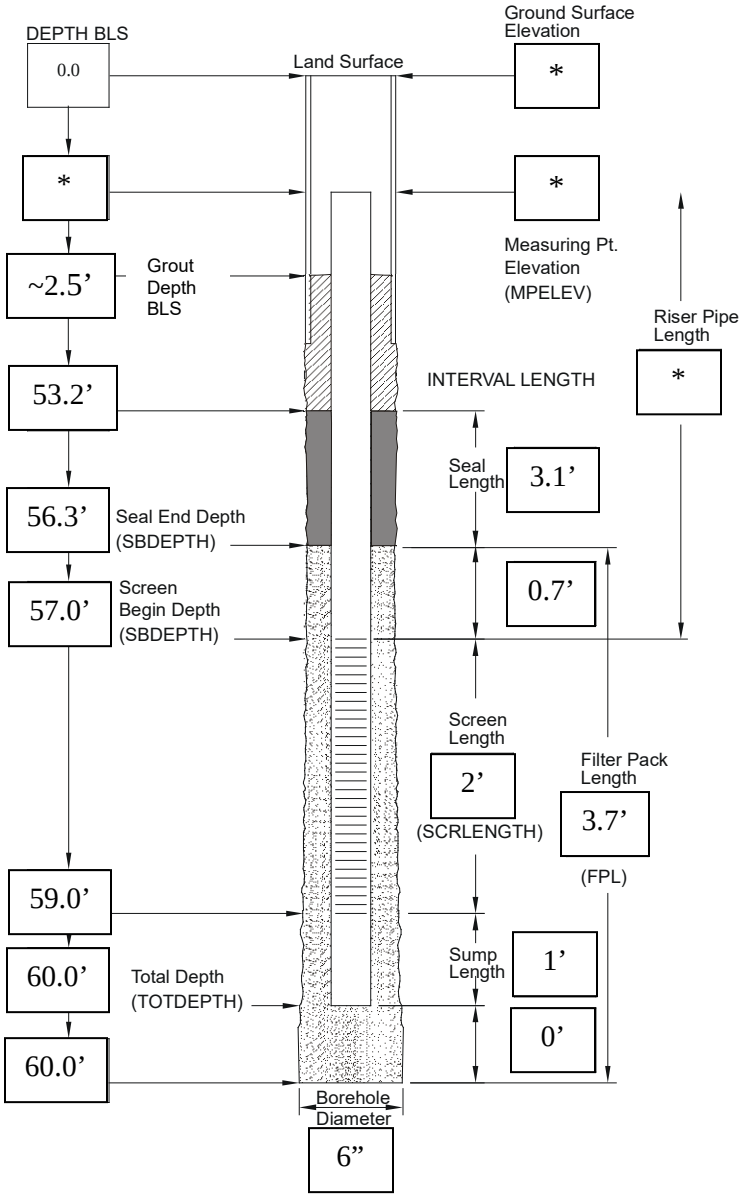
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW067
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/31/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

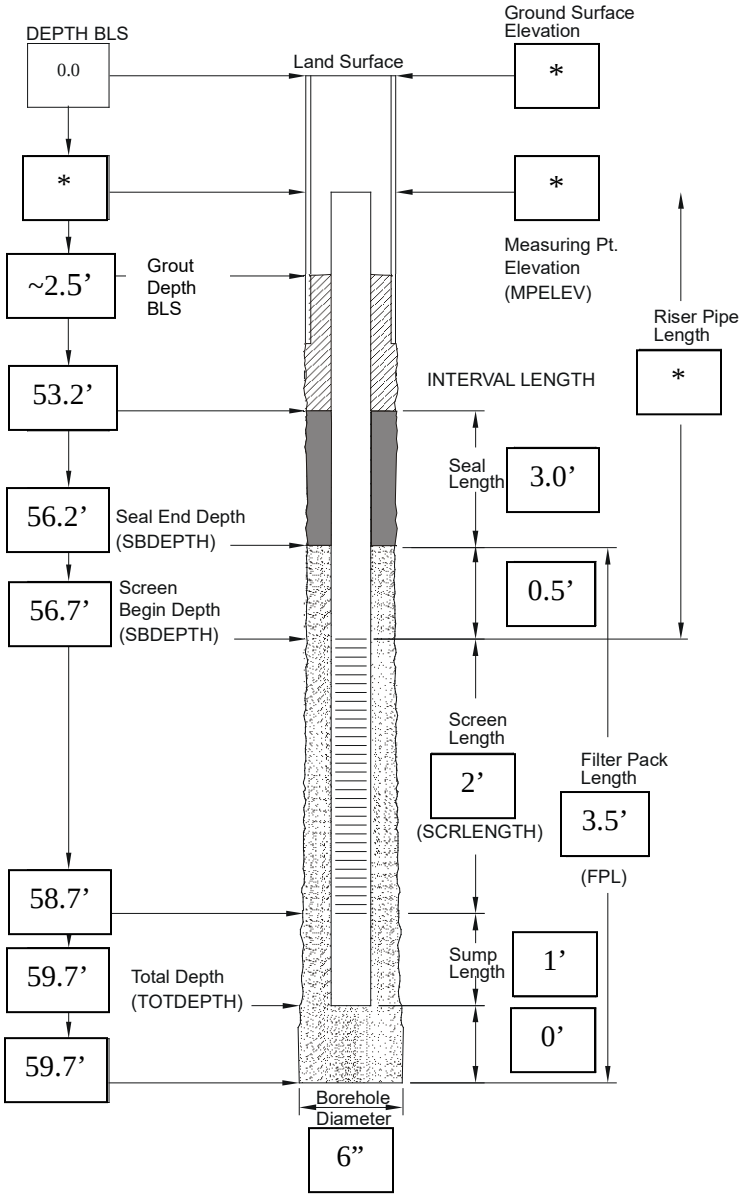
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW068
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/31/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

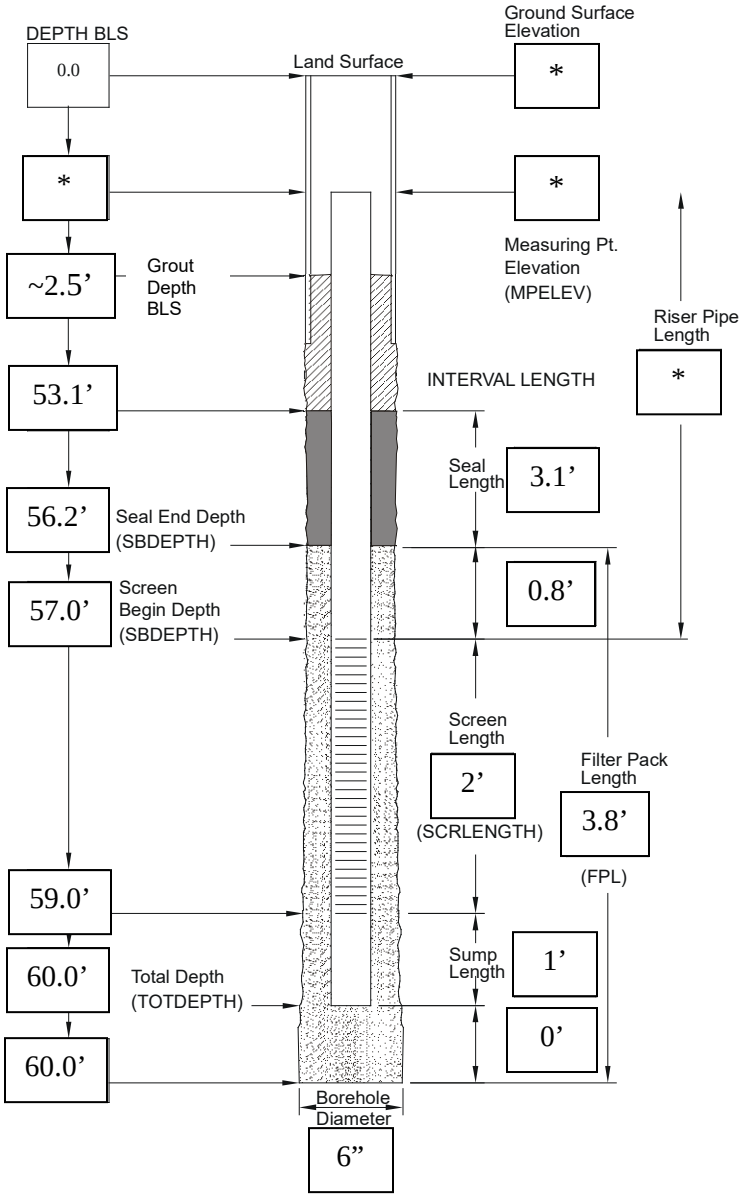
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW069
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/27/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASWs

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/27/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

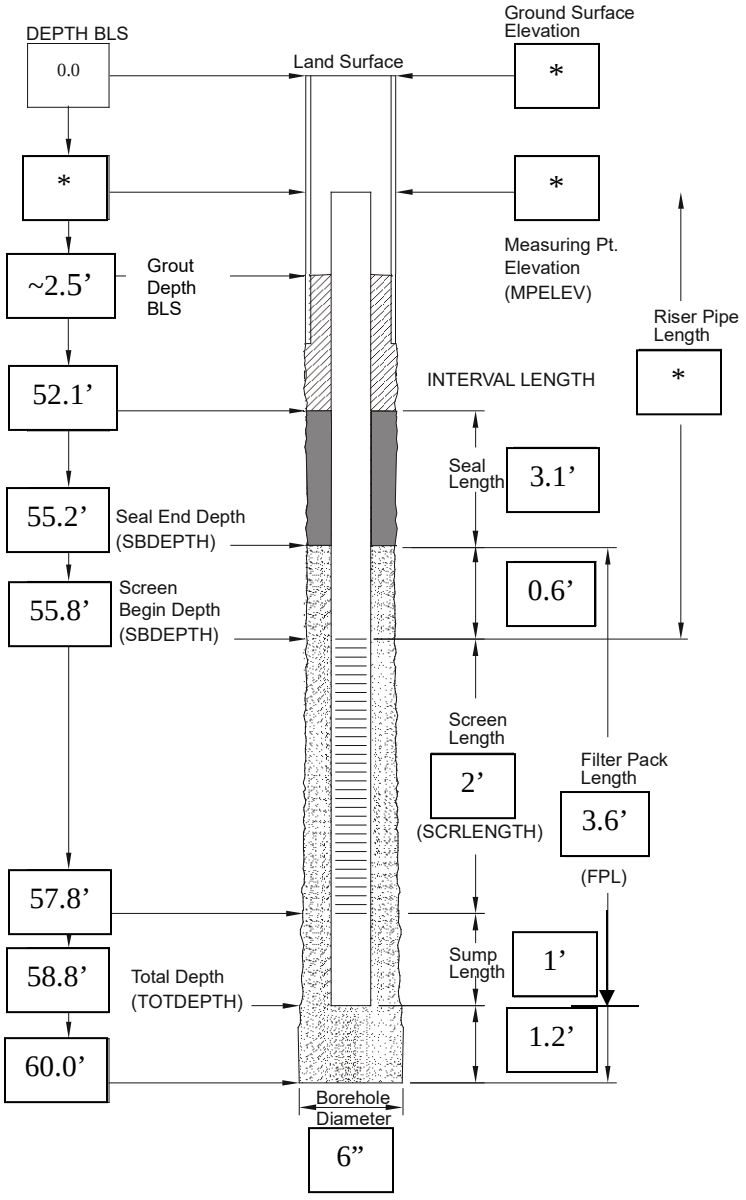
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW070
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/27/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASWs

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/27/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

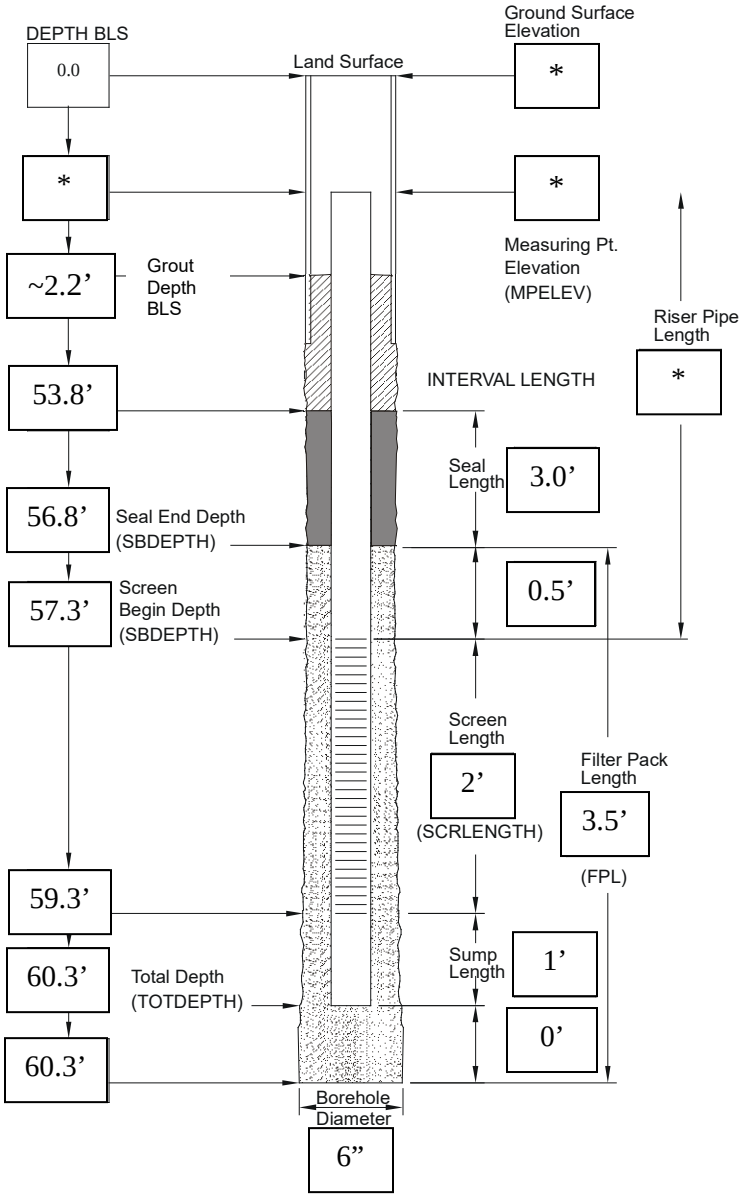
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW071
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/27/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/27/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

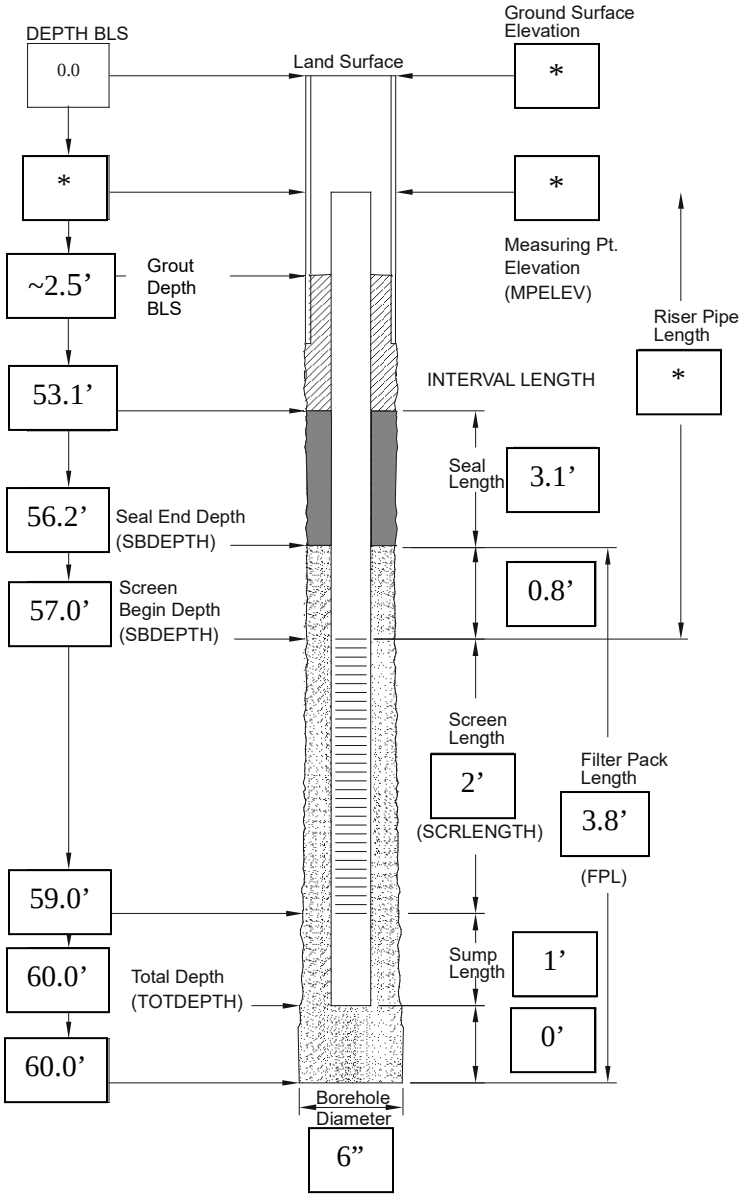
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW072
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/3/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/3/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

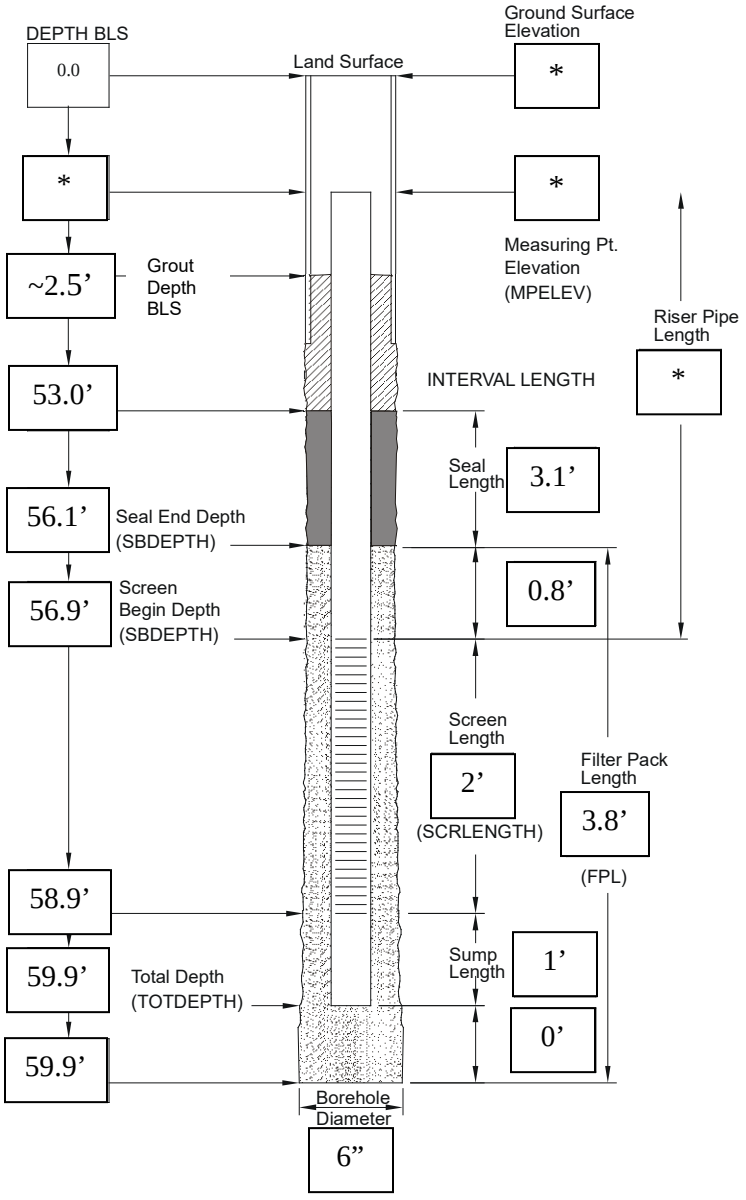
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW073
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/2/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~1 hour
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

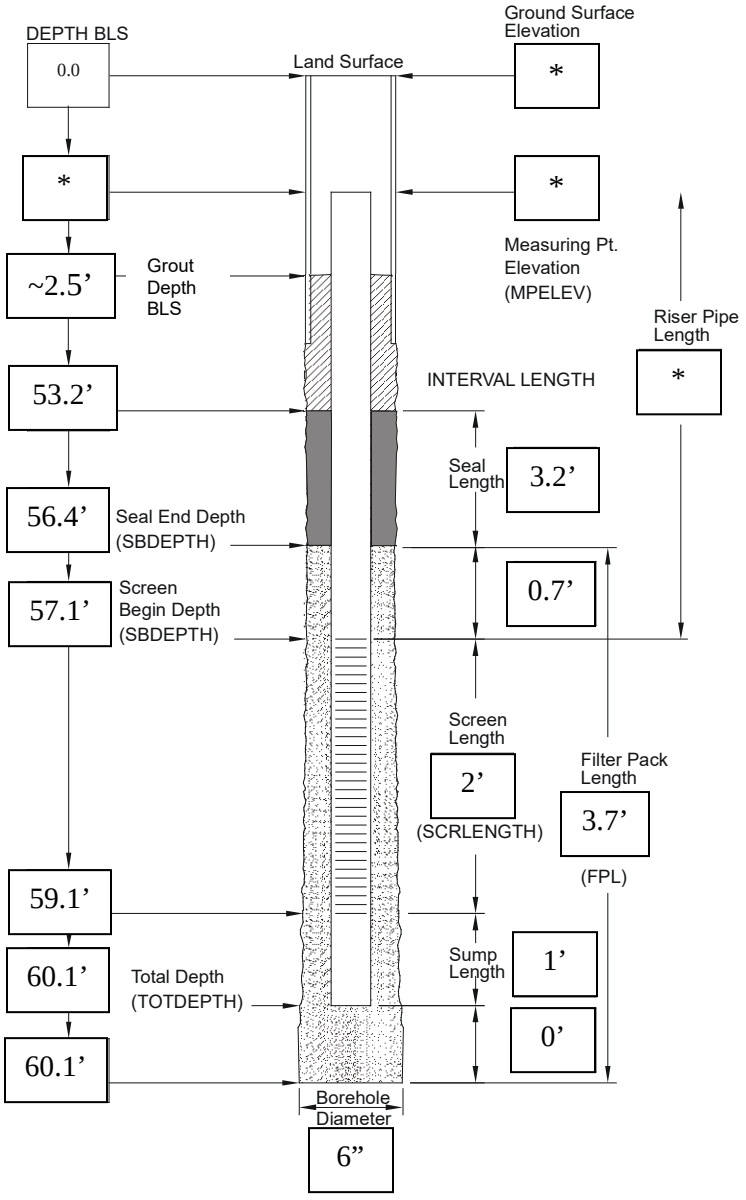
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW074
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/2/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

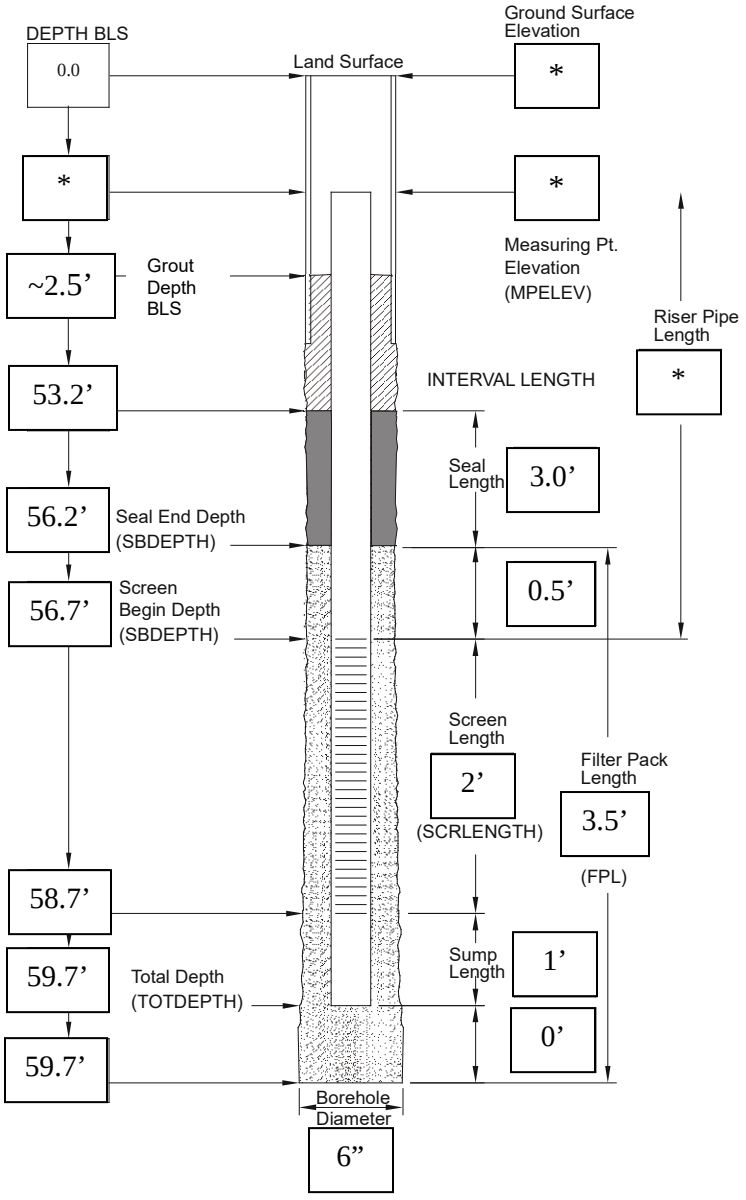
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW075
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/31/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

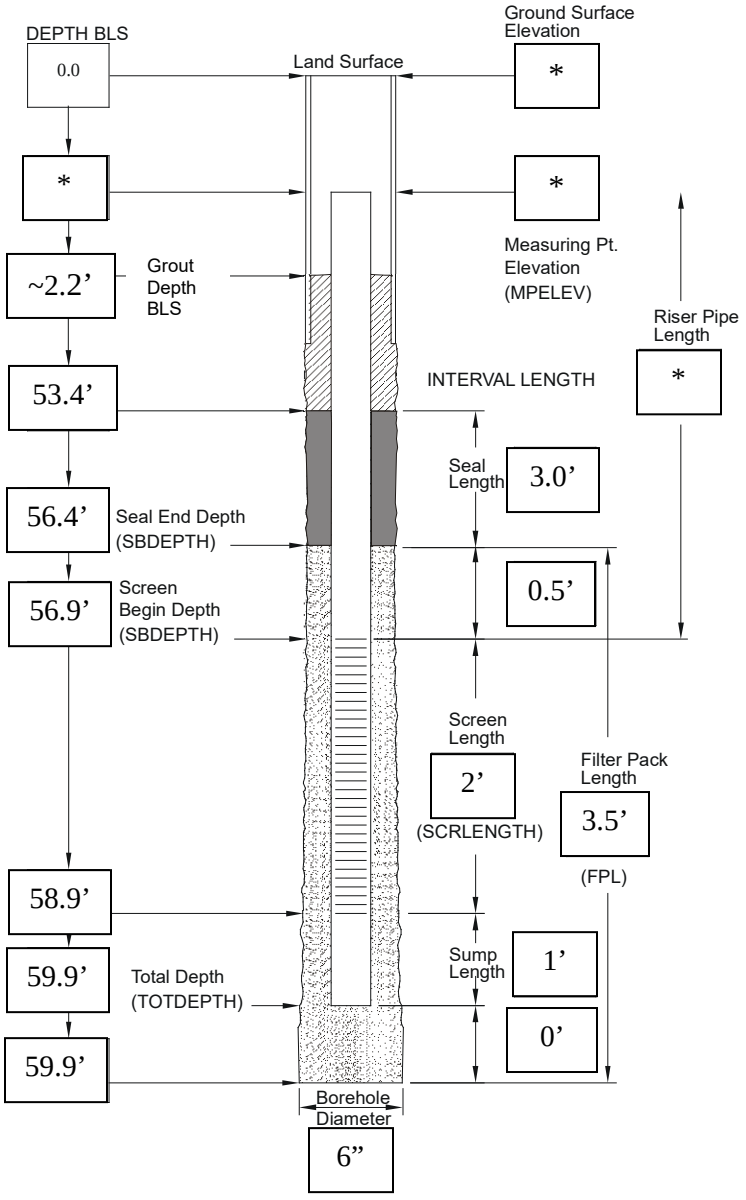
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW076
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/27/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/27/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

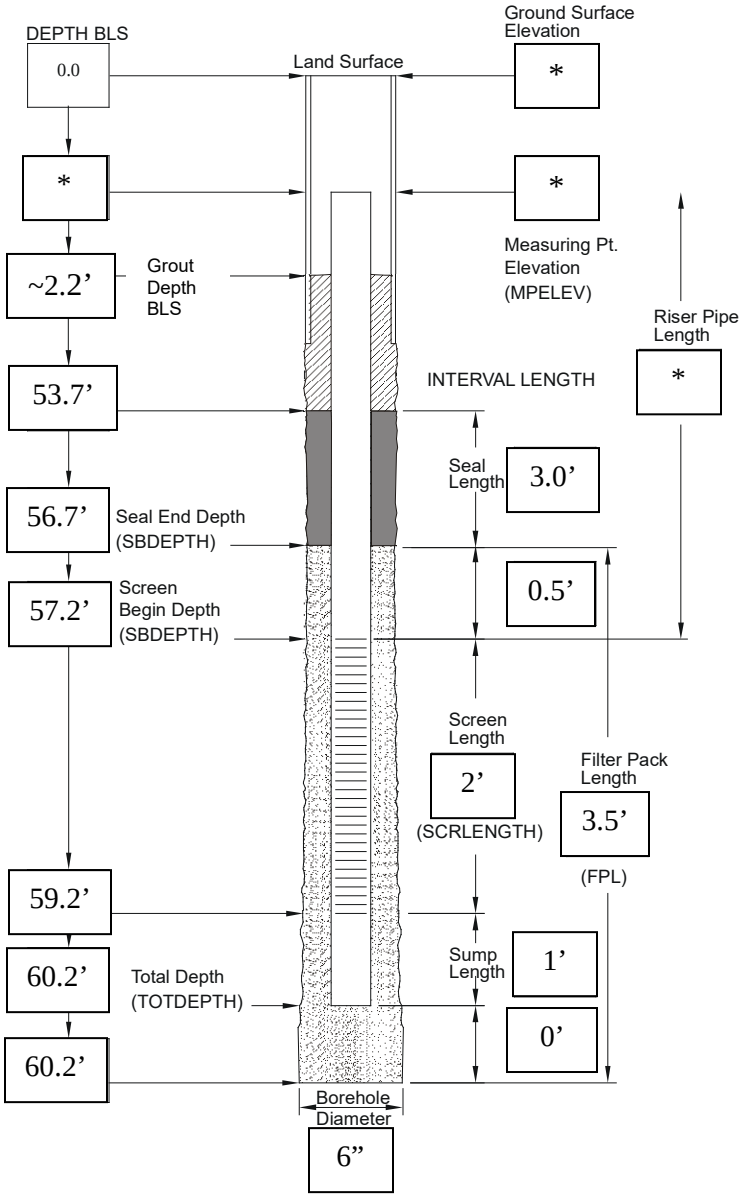
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW077
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/27/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/27/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

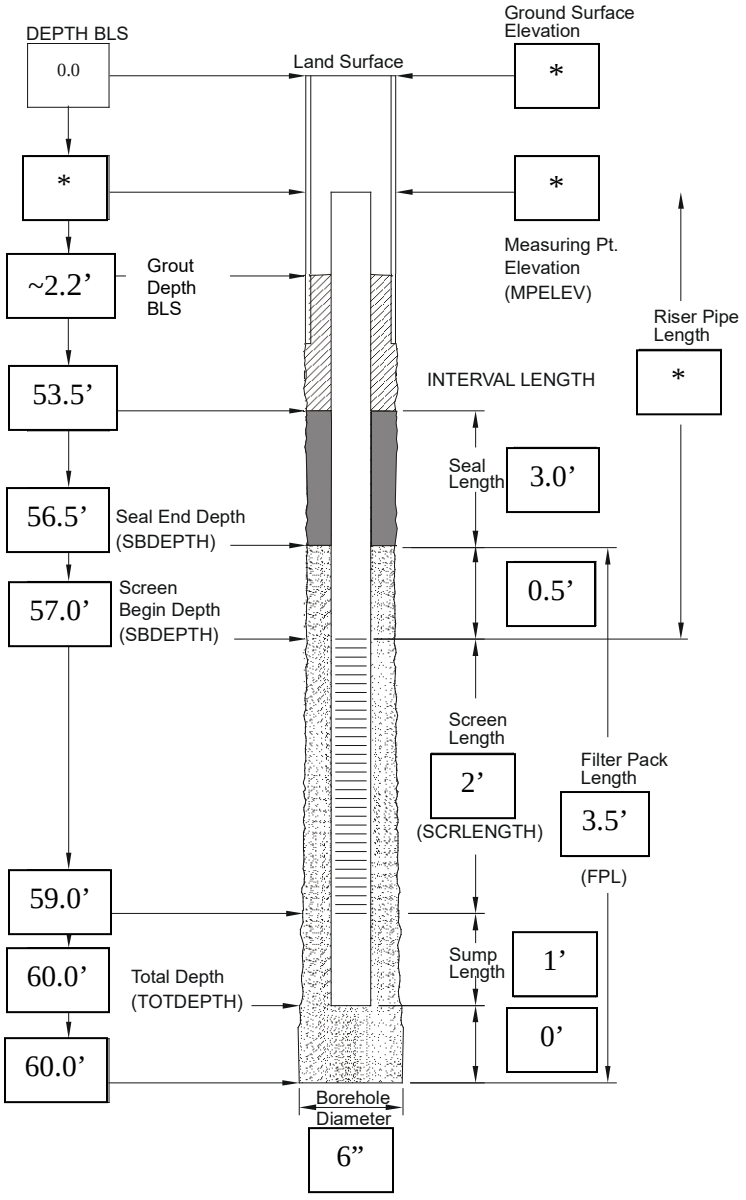
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW078
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/27/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/27/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

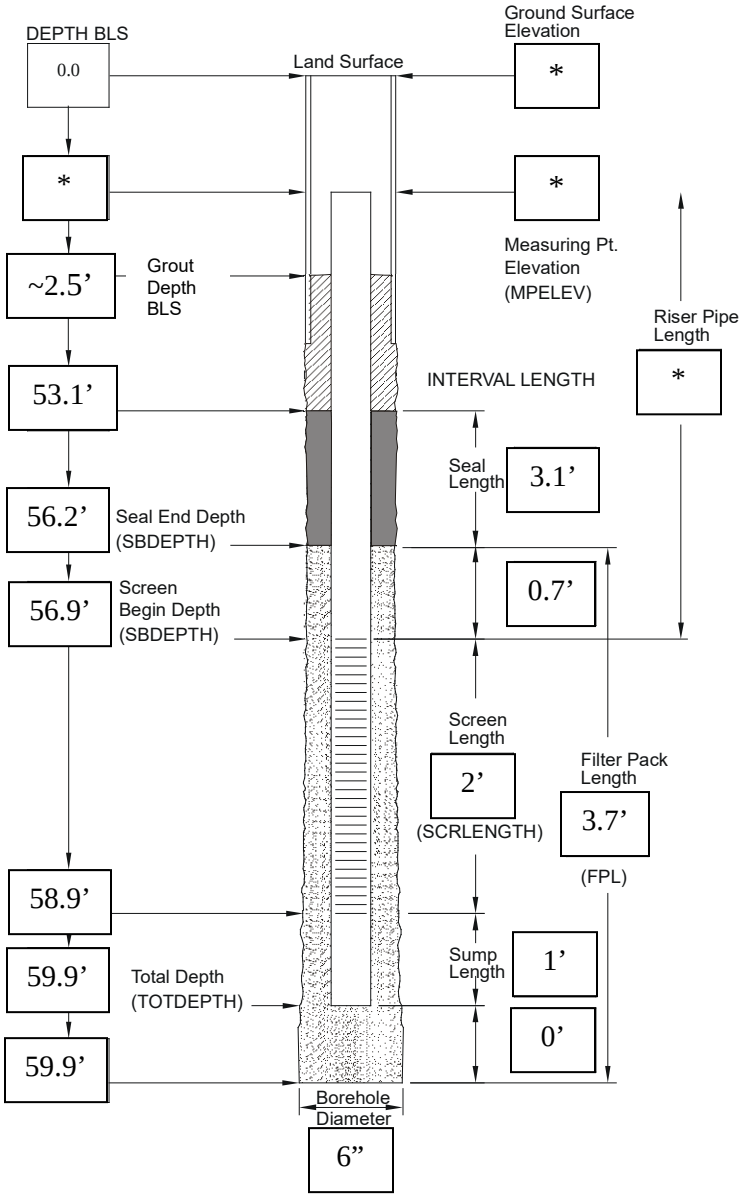
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW079
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/3/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/3/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

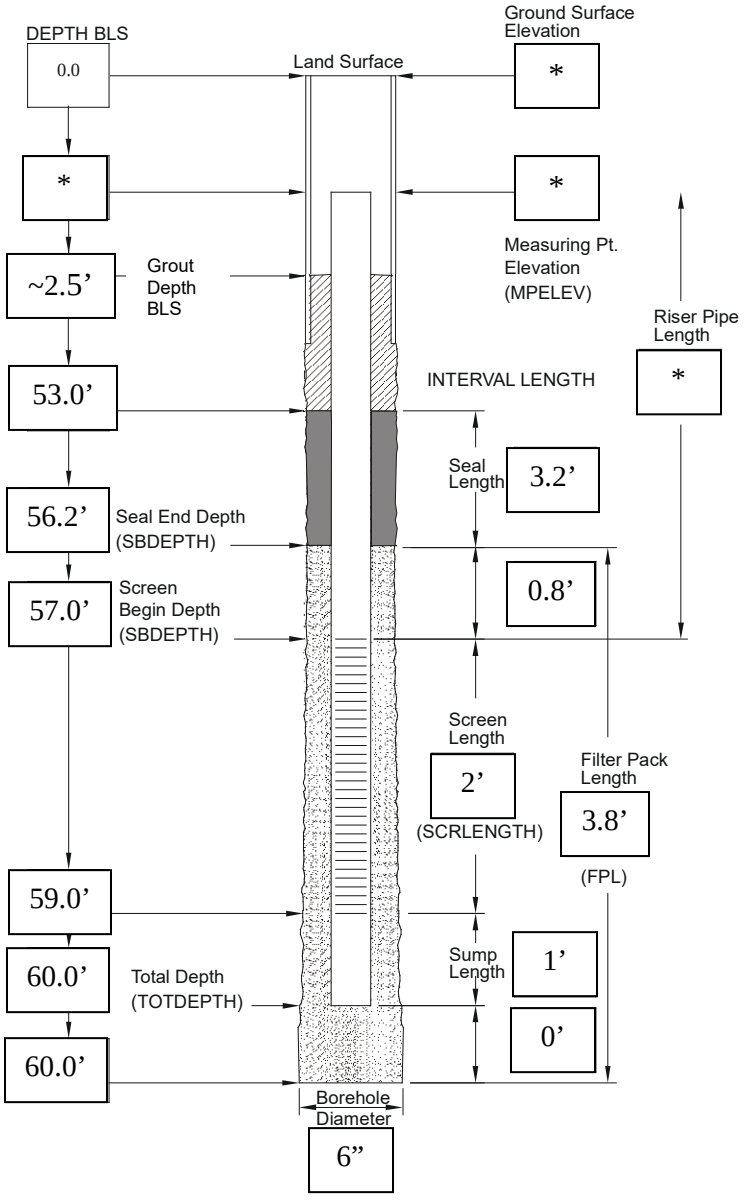
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW080
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/3/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/3/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~1 hour
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

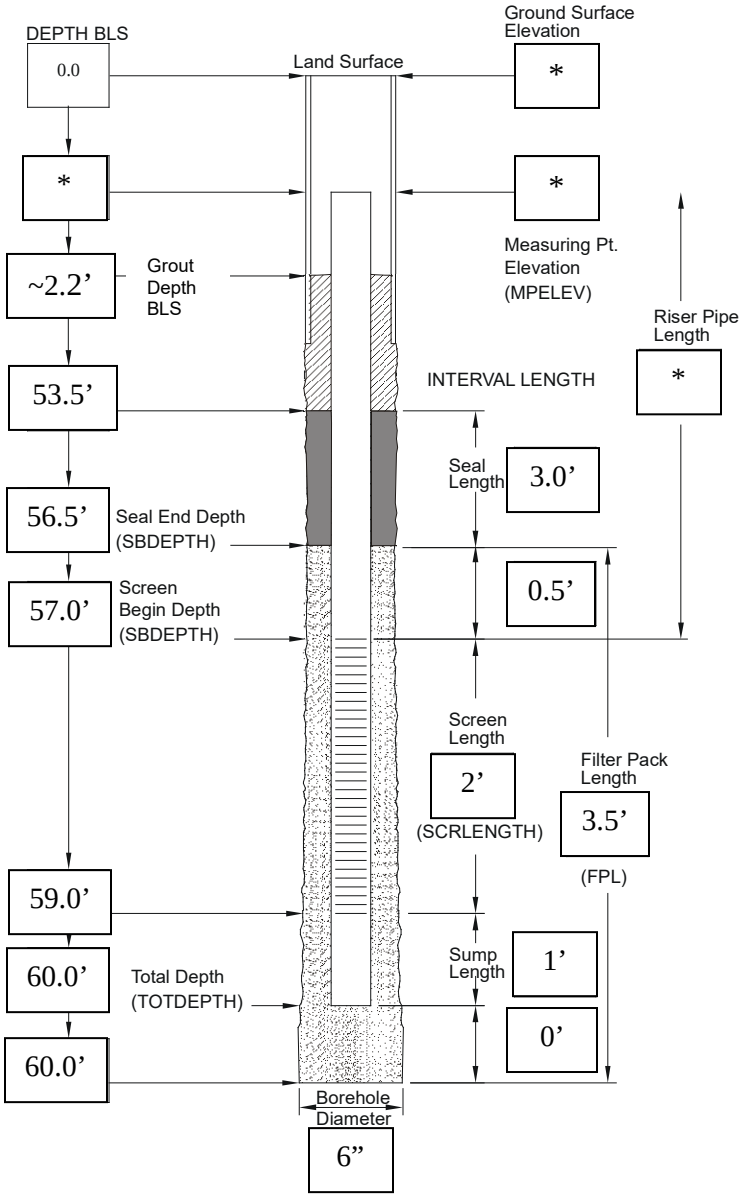
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW081
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/26/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

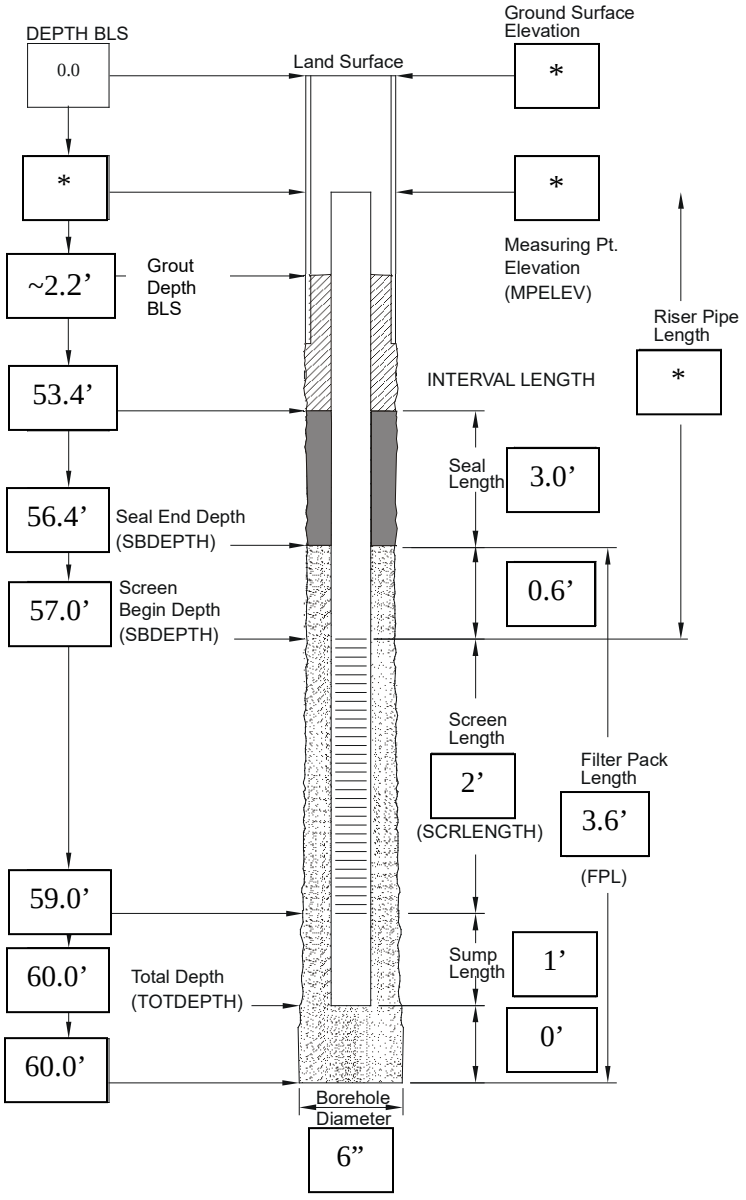
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW082
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/26/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

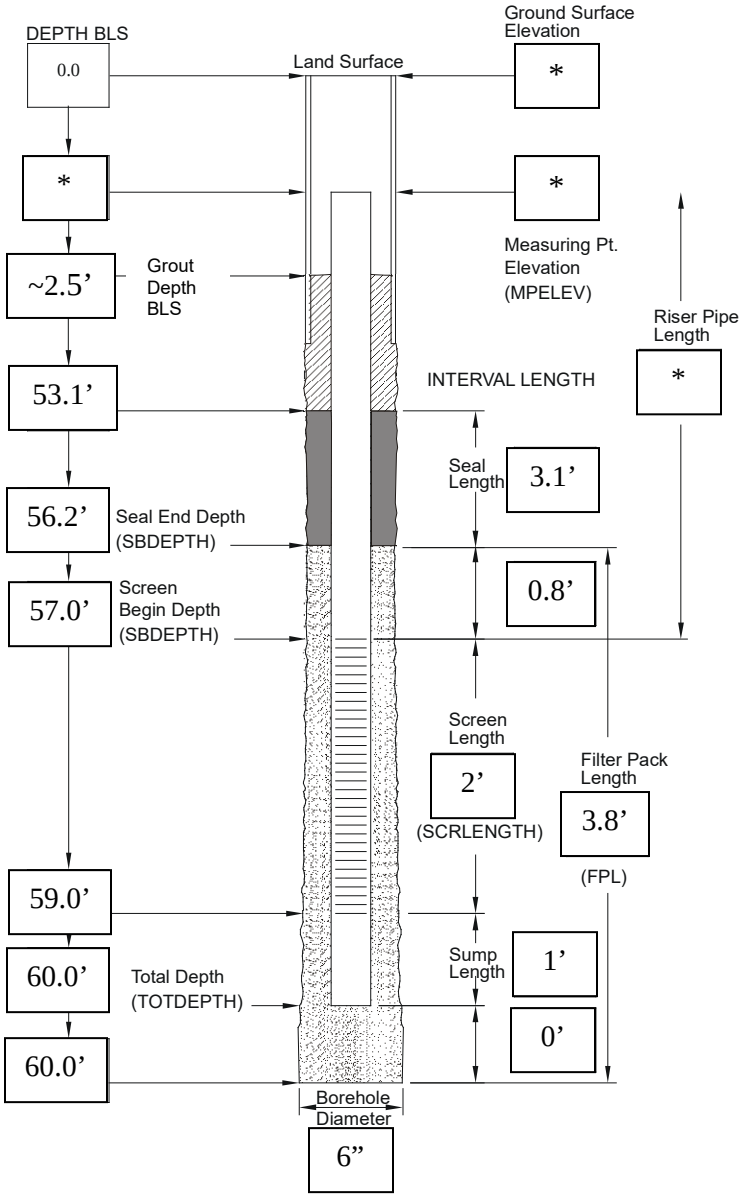
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW083
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/3/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/3/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~30 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

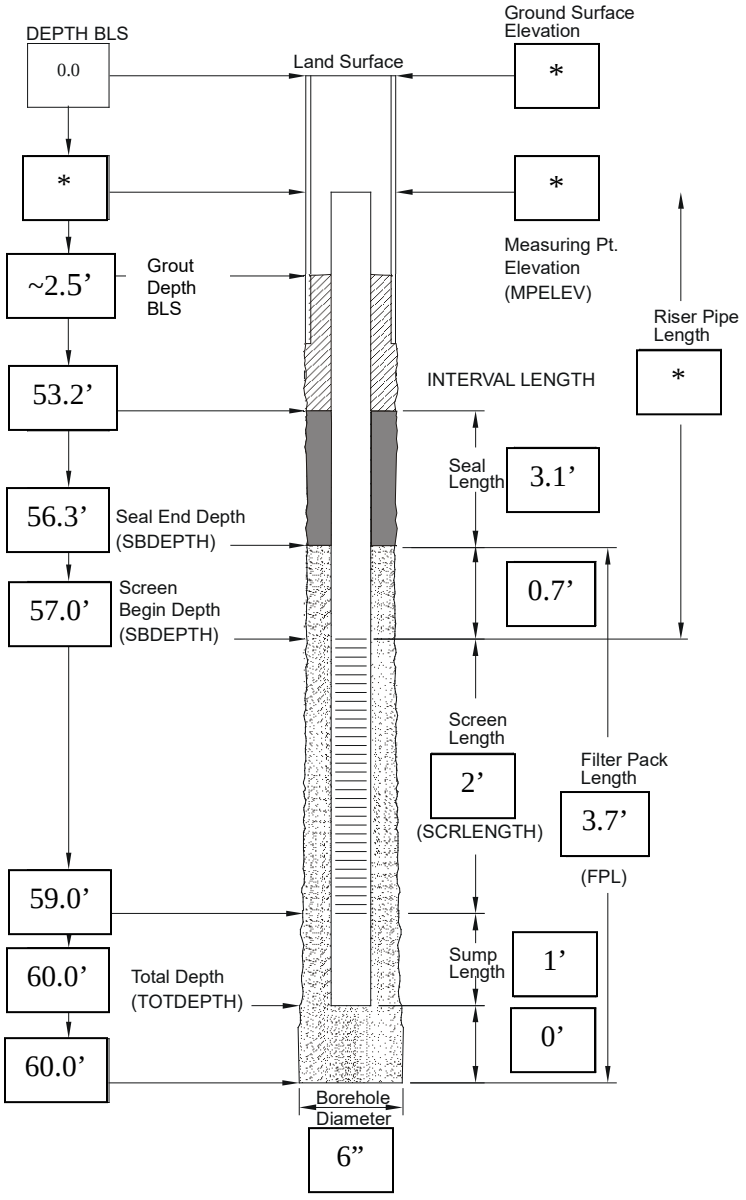
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW084
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/2/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

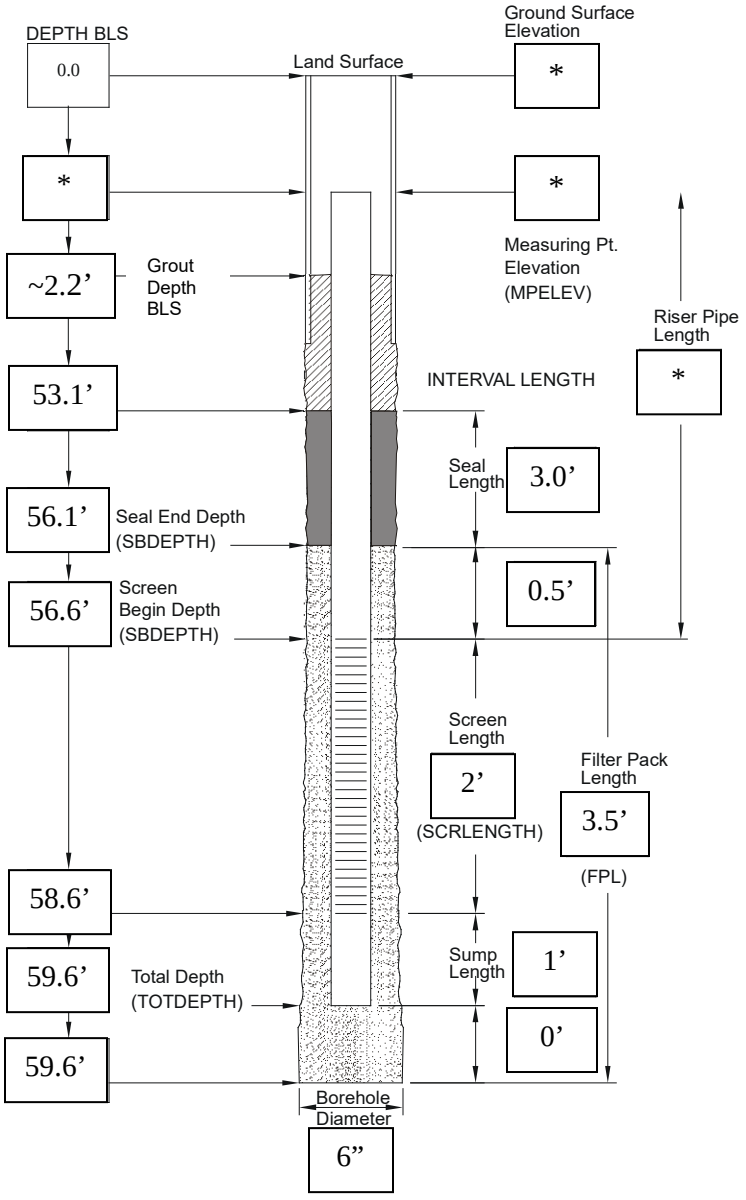
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW085
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/25/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

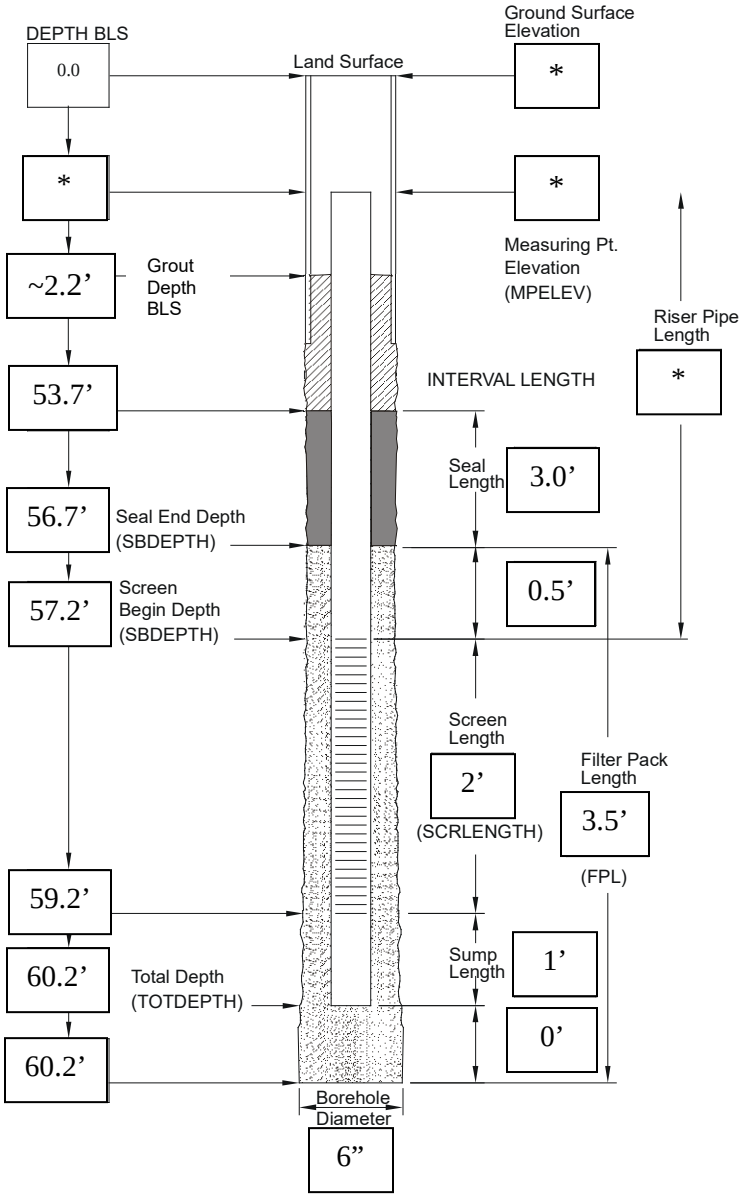
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW086
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/26/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

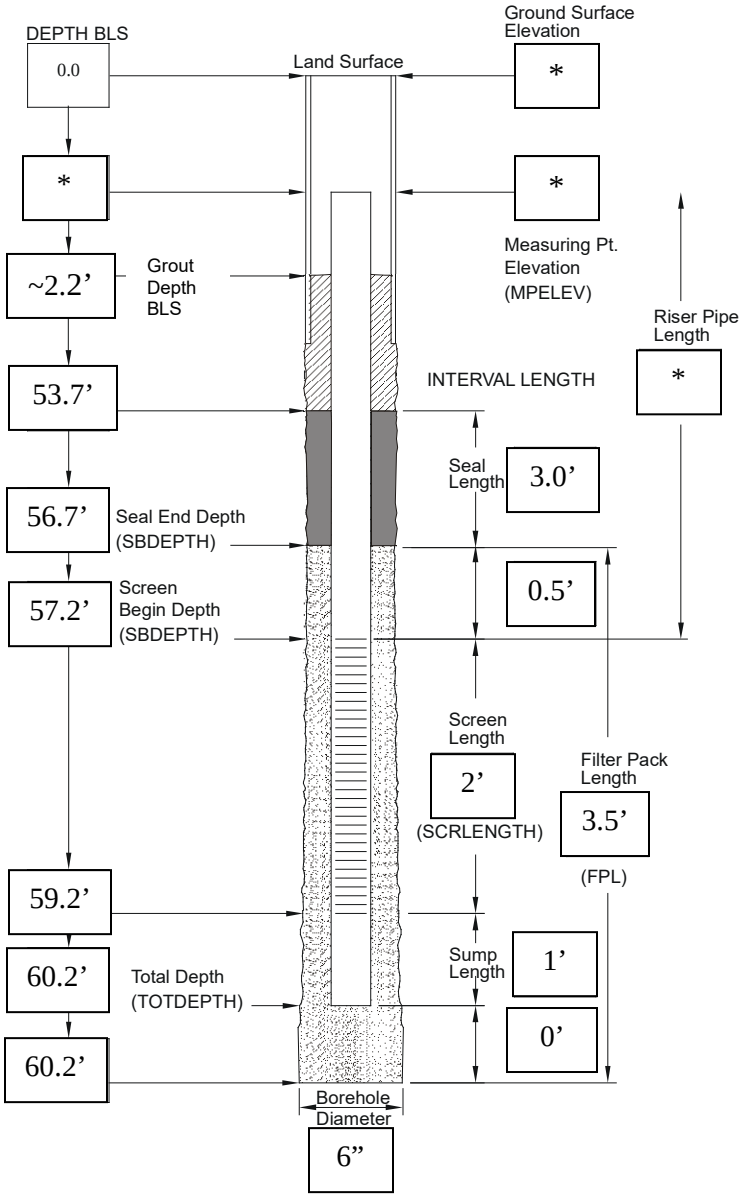
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW087
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/25/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

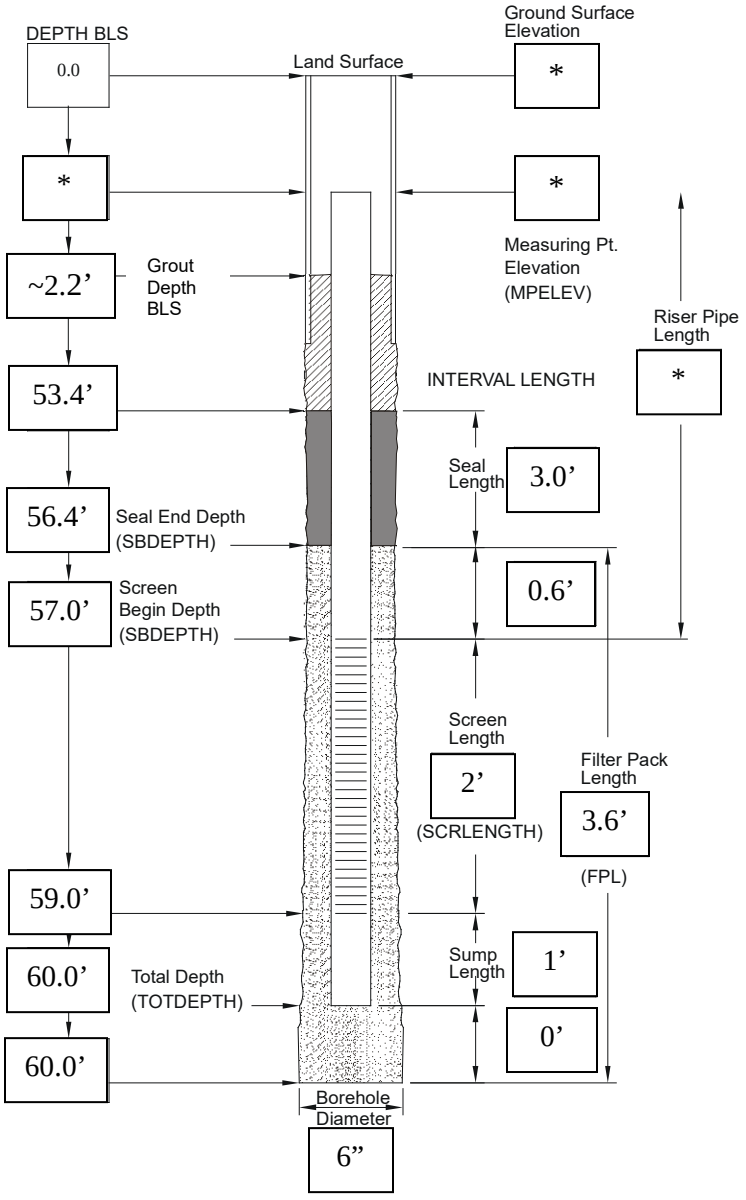
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW088
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/25/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

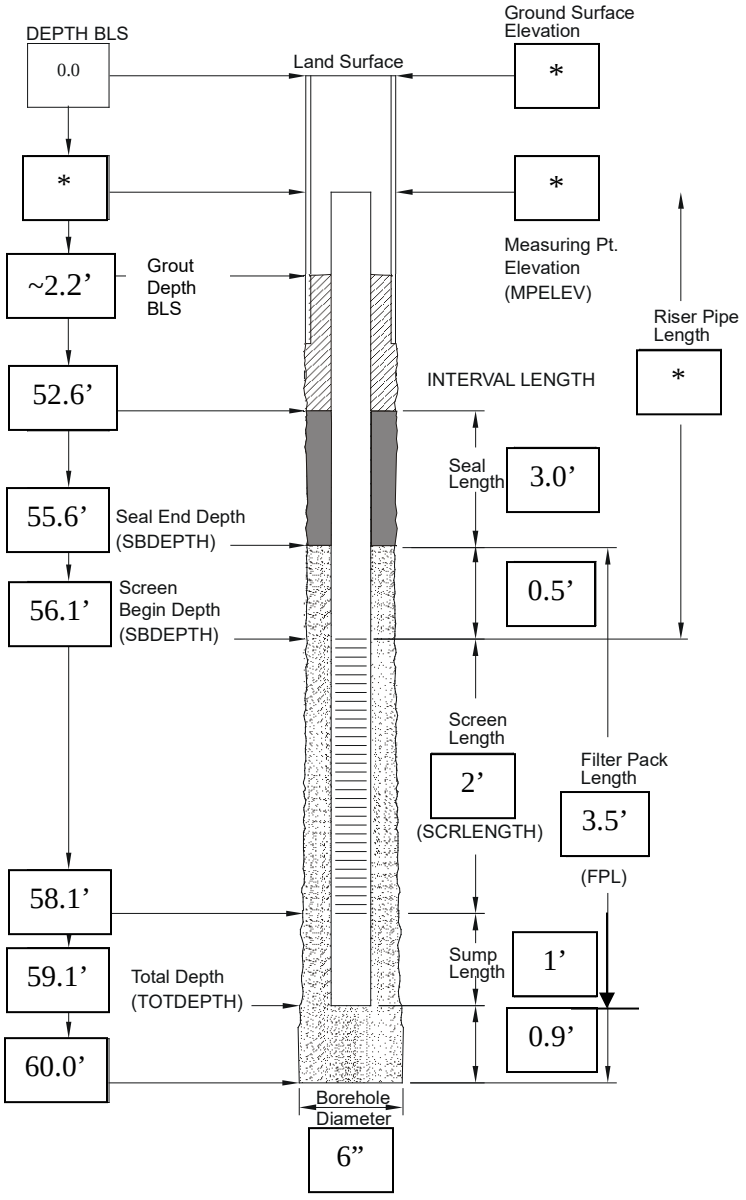
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW089
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/26/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/26/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: Formation sand
Placement Method: Collapse via rotosonic
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

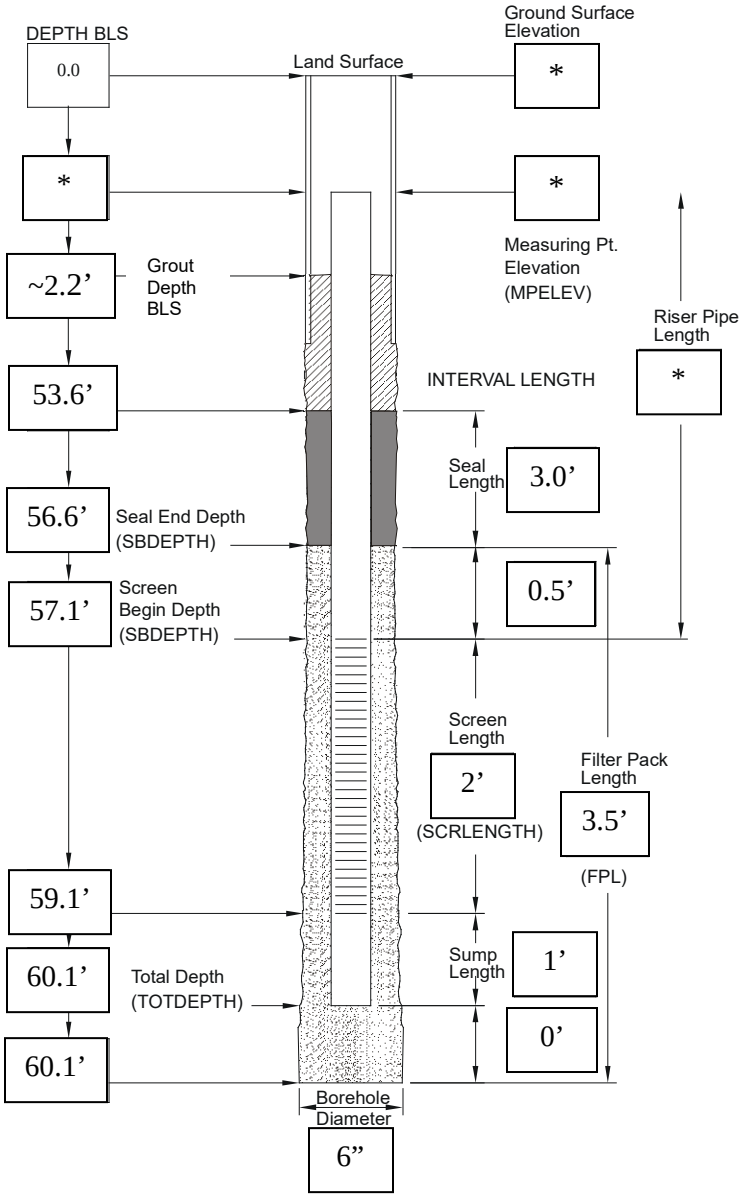
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW090
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/24/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

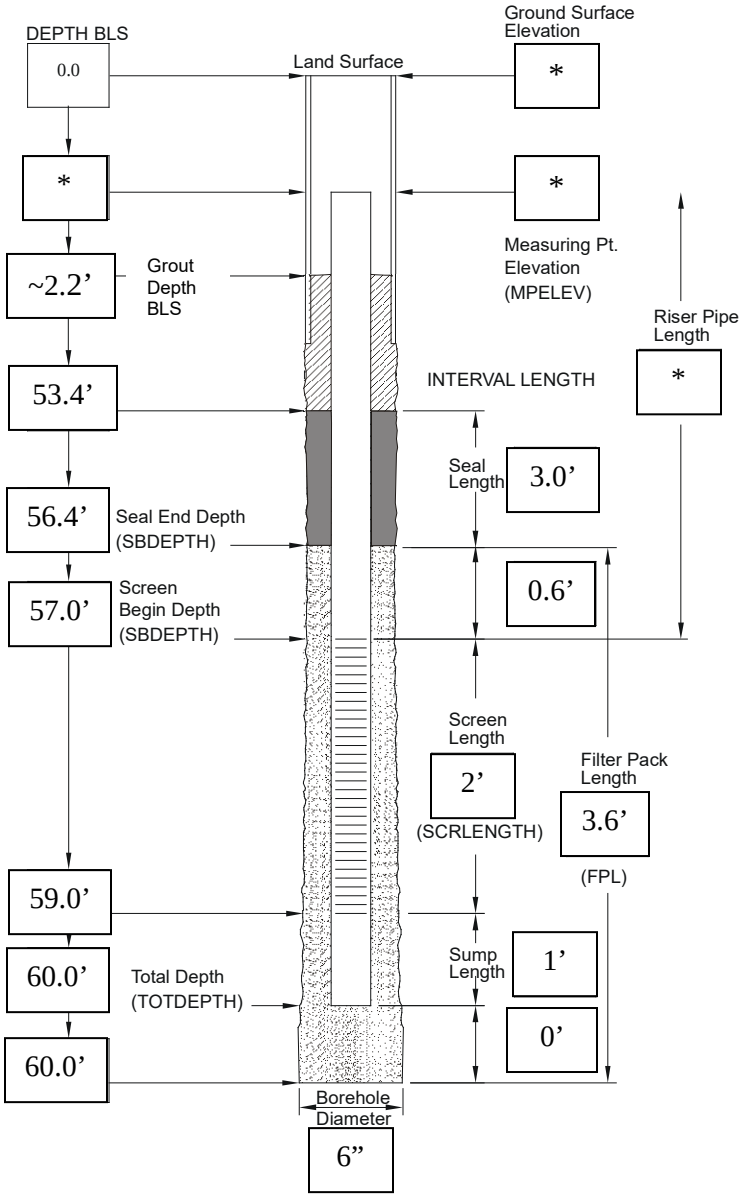
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW091
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/24/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

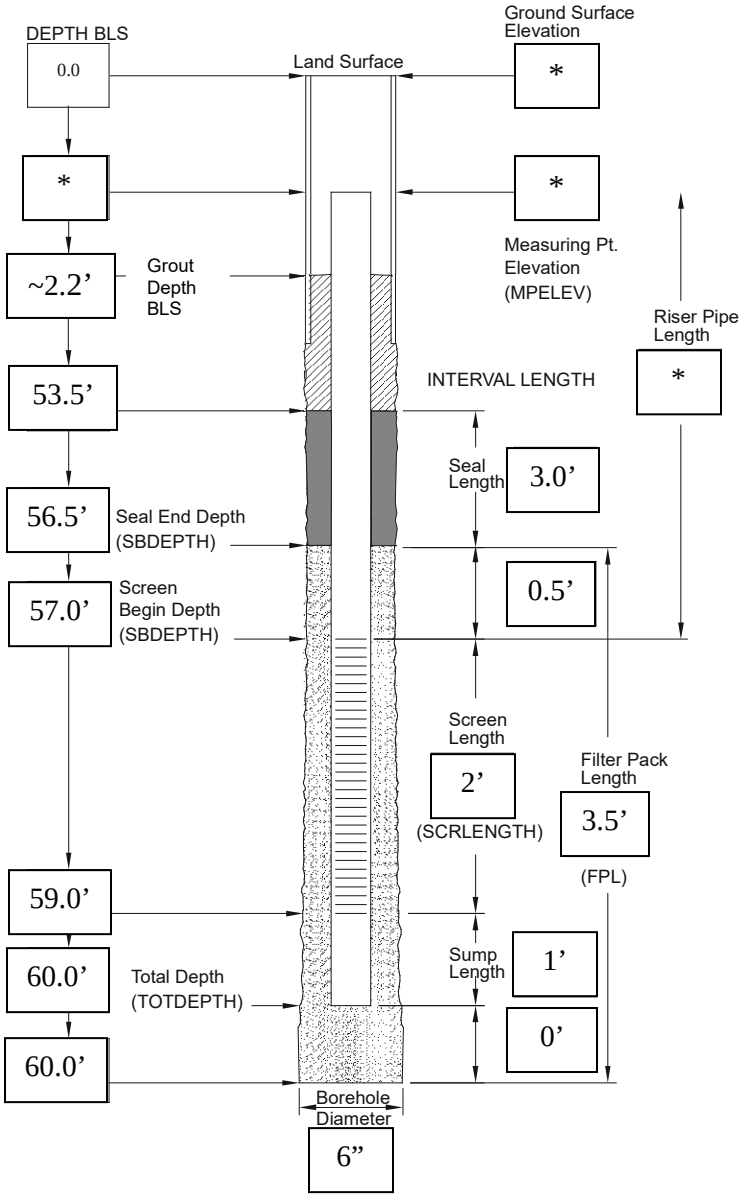
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW092
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/24/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

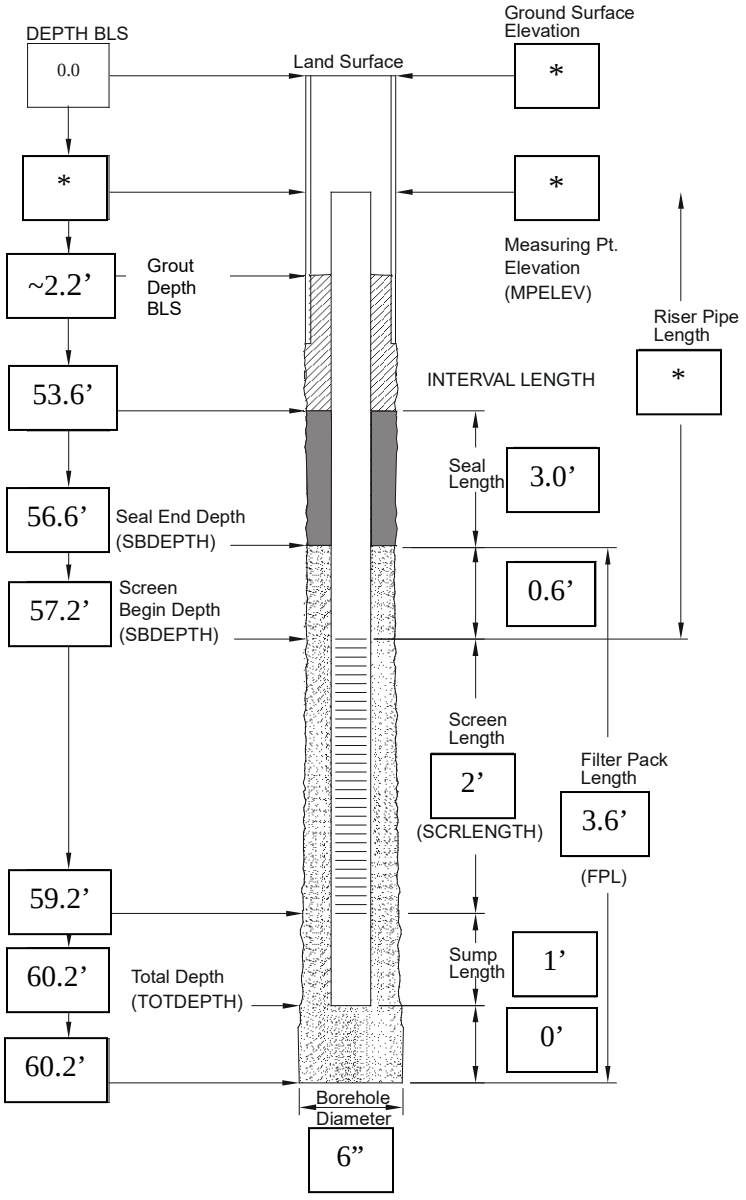
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW093
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/24/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/24/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

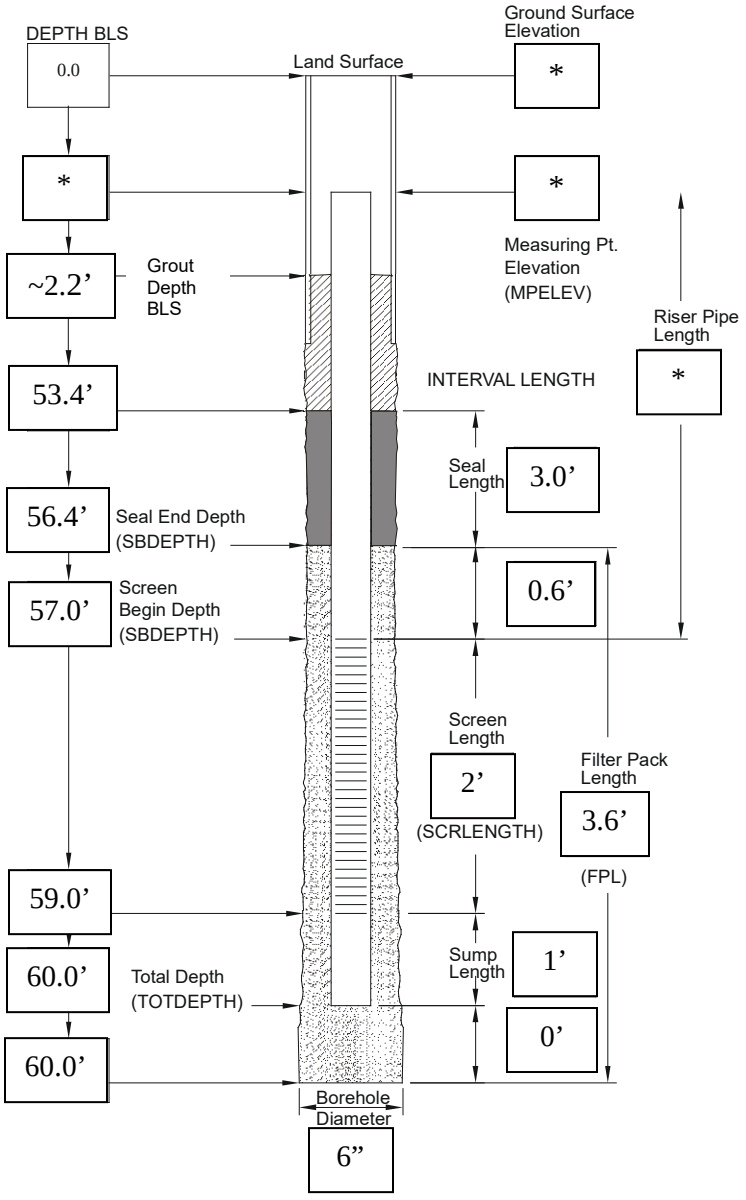
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW094
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/23/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/23/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

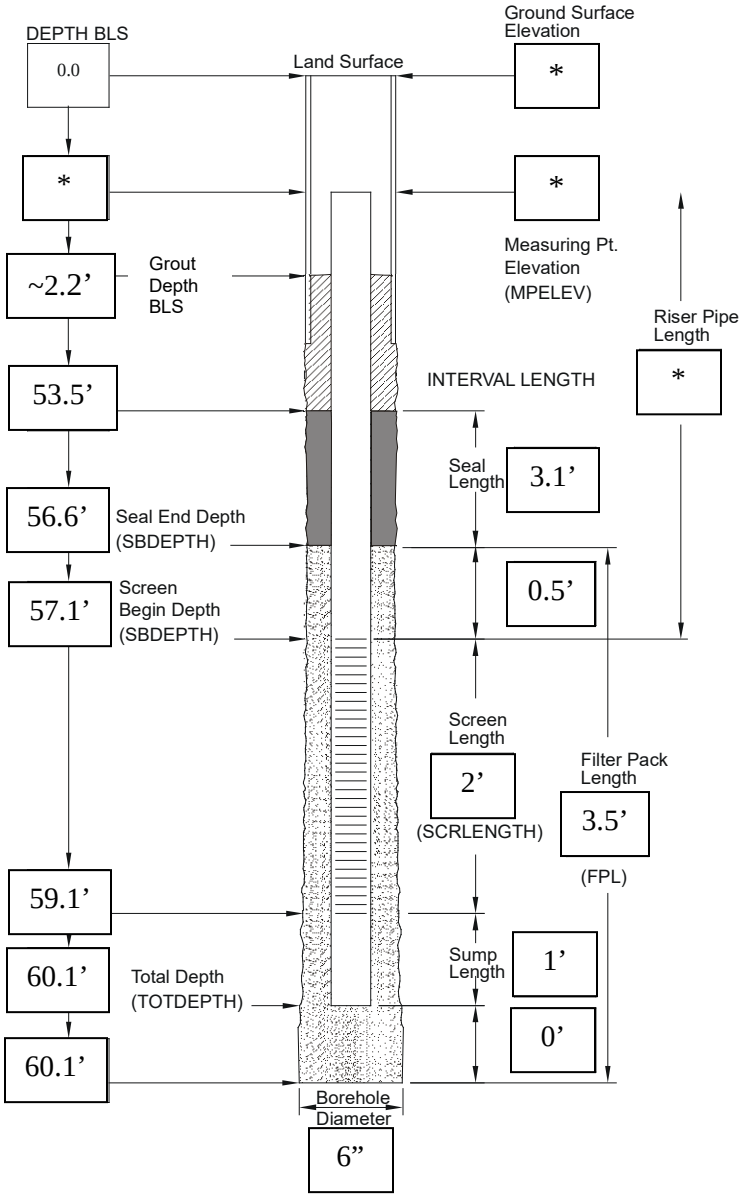
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW095
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/20/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/20/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

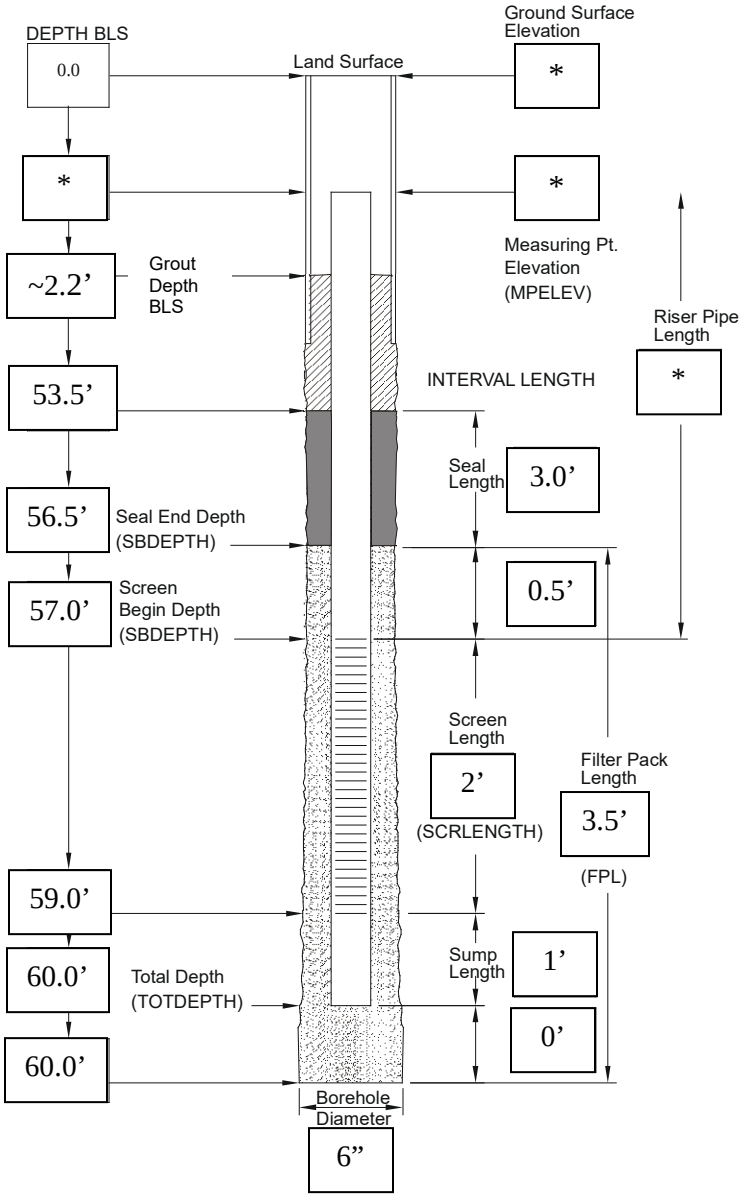
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW096
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/20/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/20/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

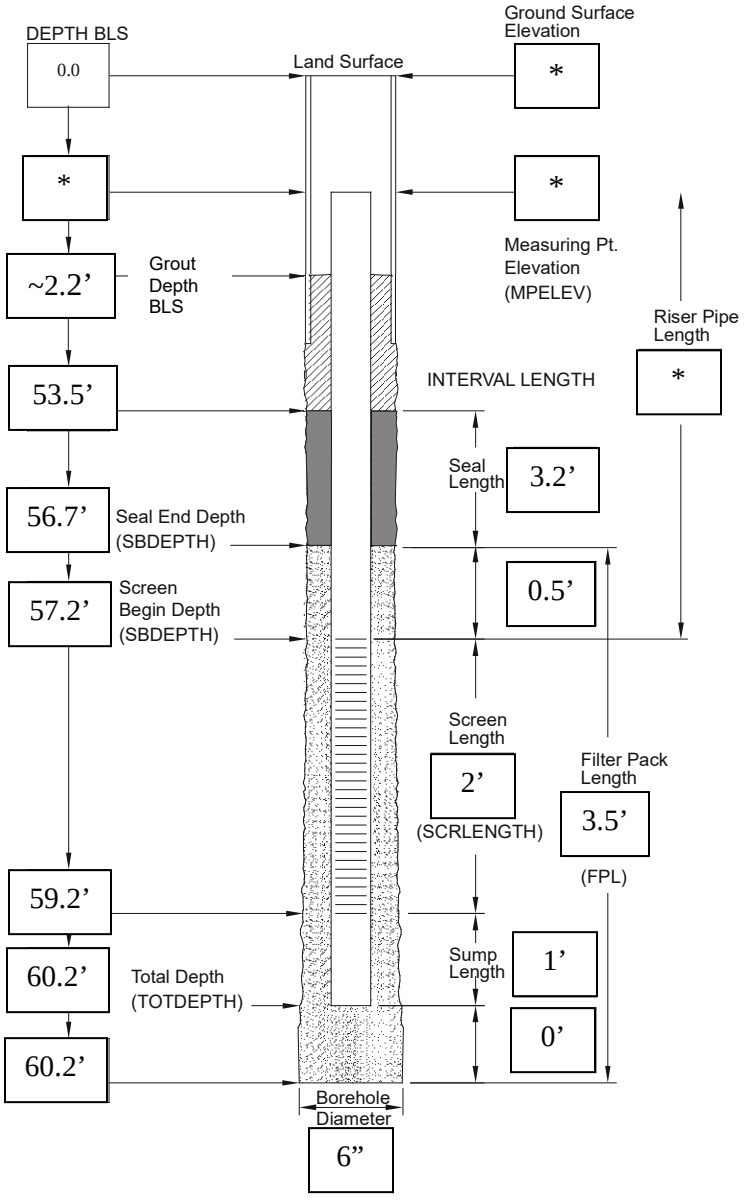
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW097
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/20/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/20/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

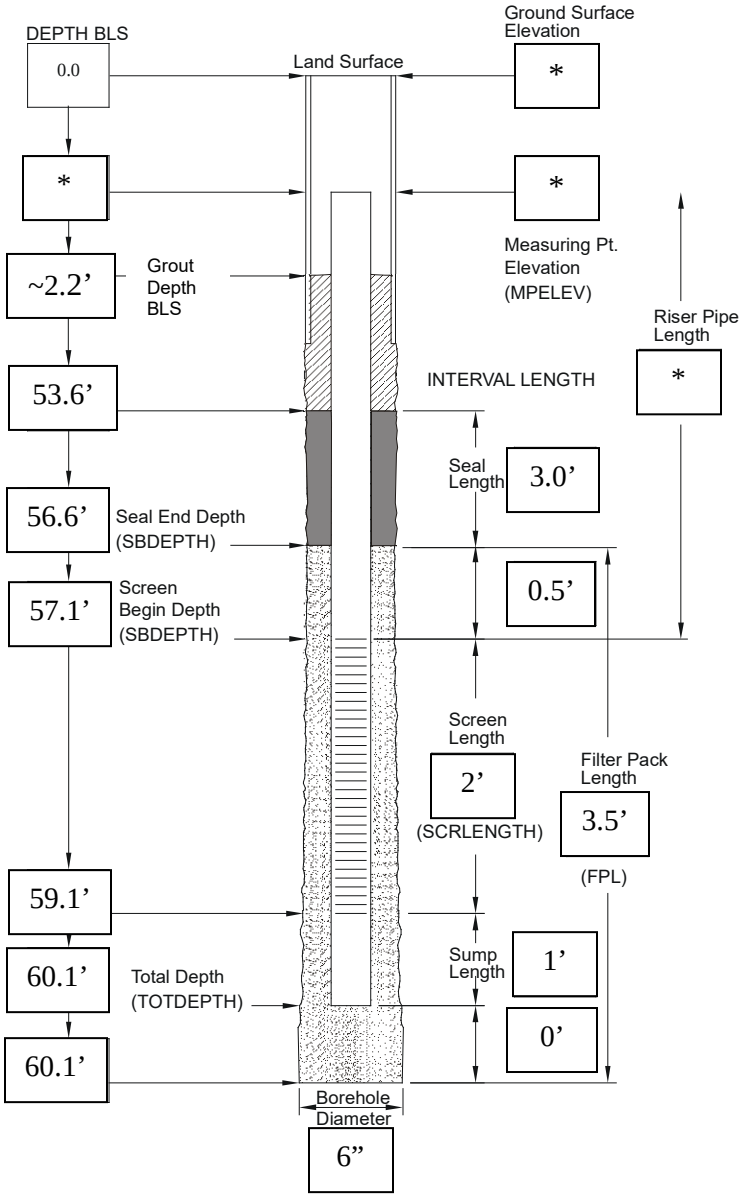
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW098
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/23/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/23/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

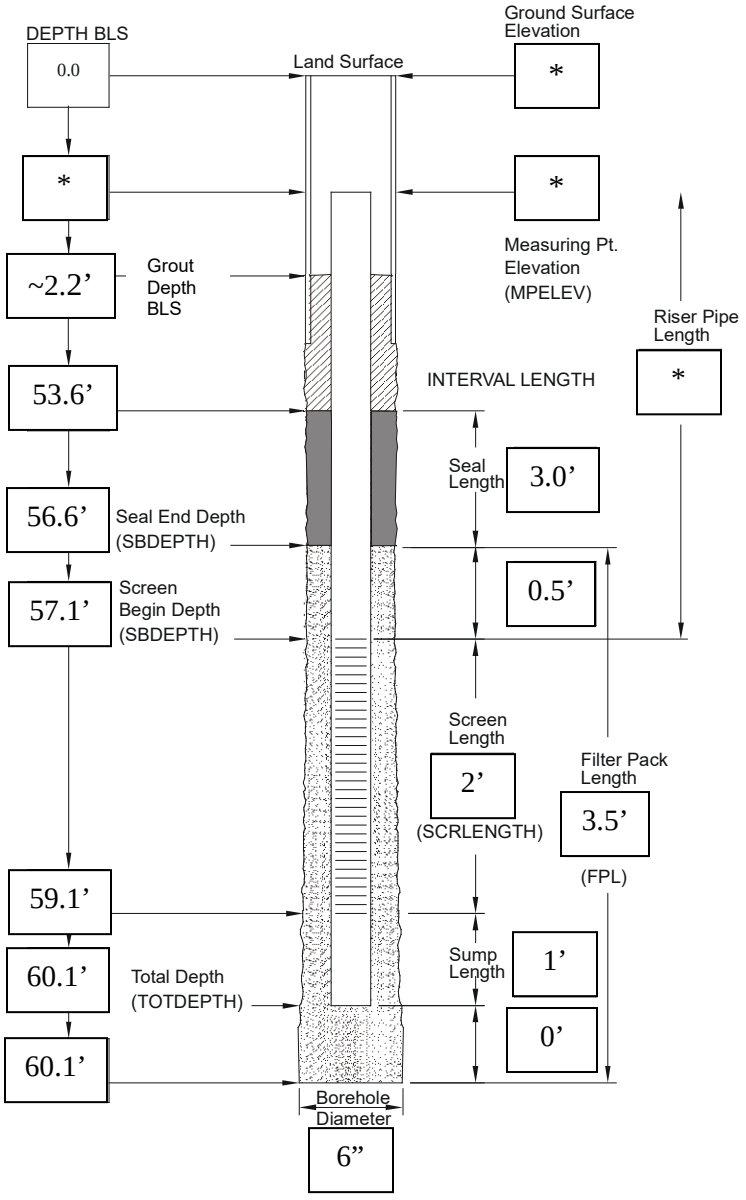
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW099
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackary Munger
Signature: Zackary Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/23/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/23/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

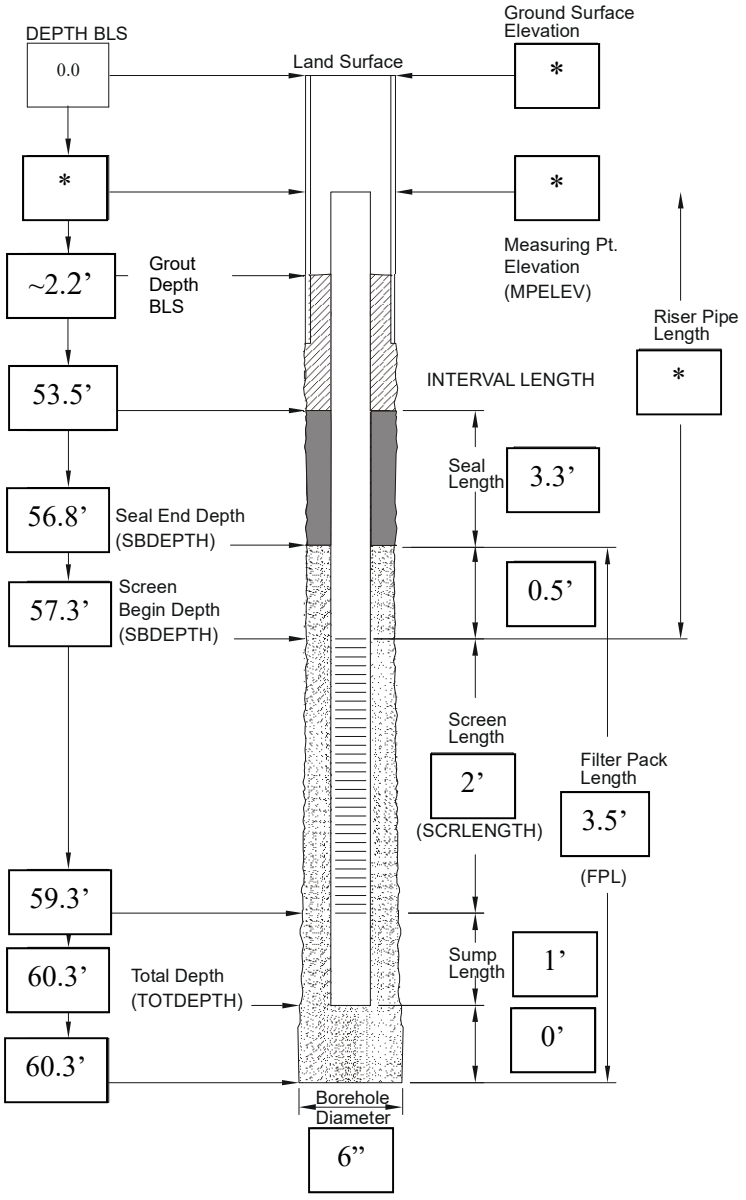
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW100
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/19/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

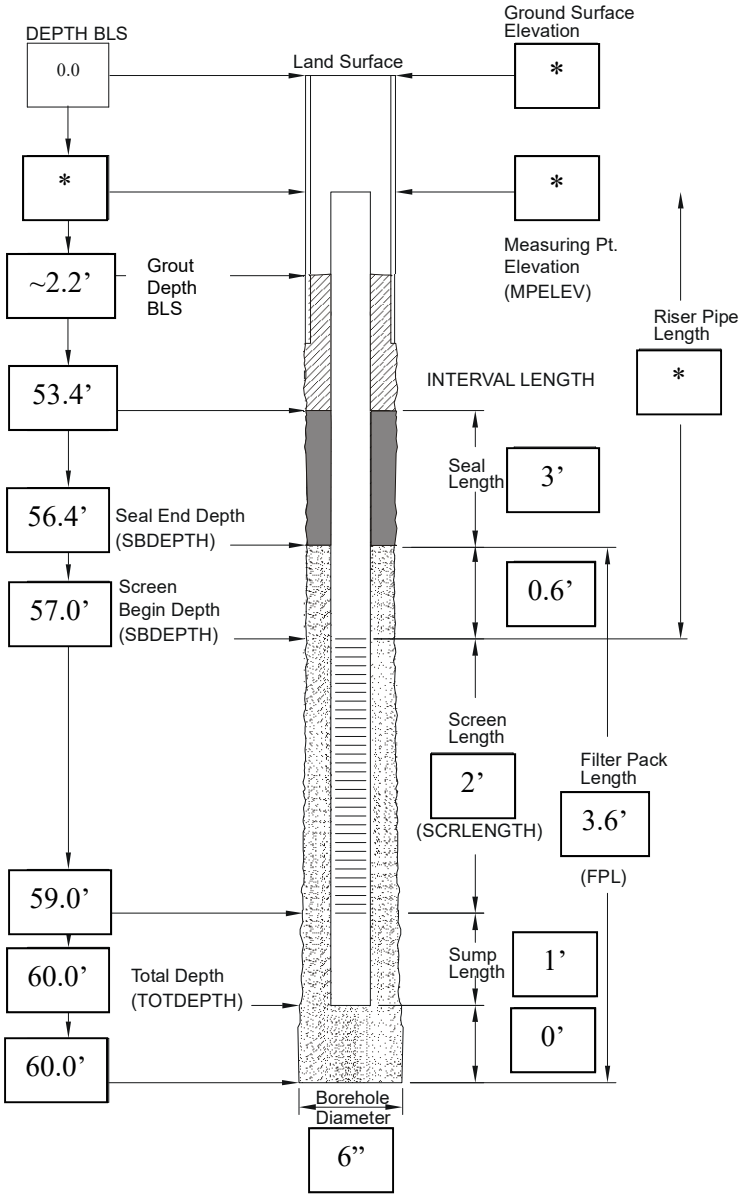
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW101
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/30/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/30/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR
Screen interval and total depth altered after confirmation measurement in field

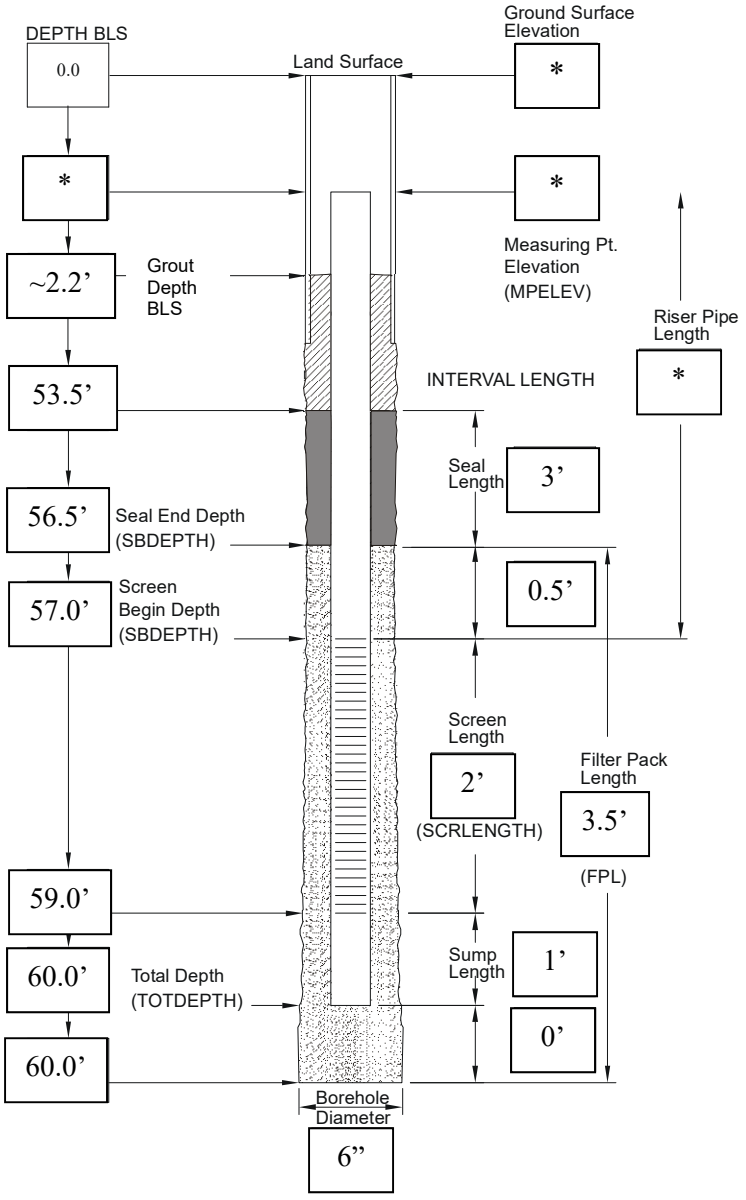
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW102
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/30/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/31/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR

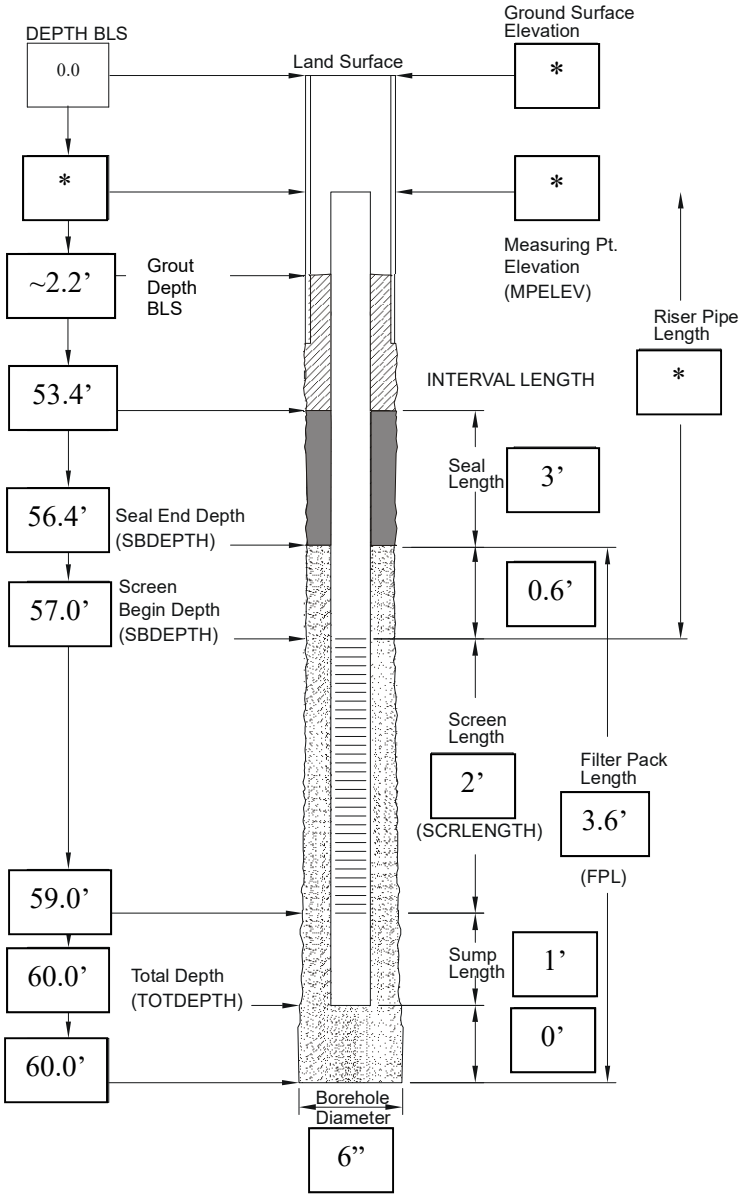
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW103
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/31/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR

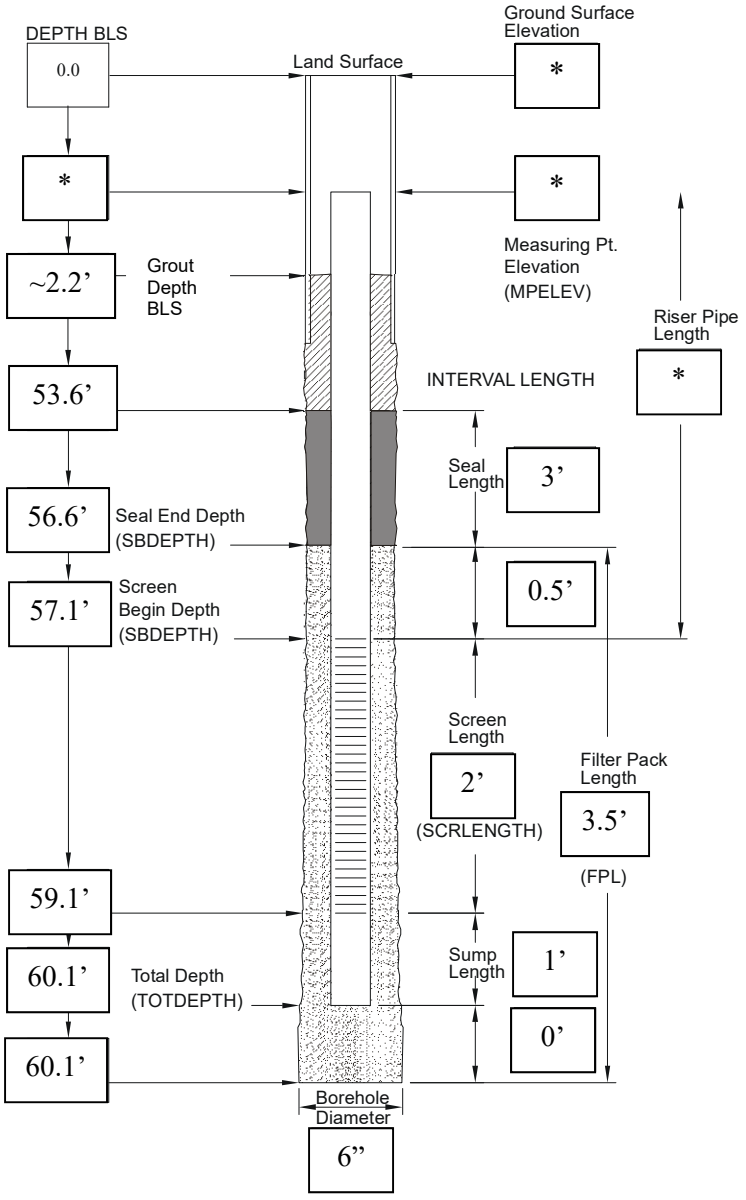
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW104
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/31/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR

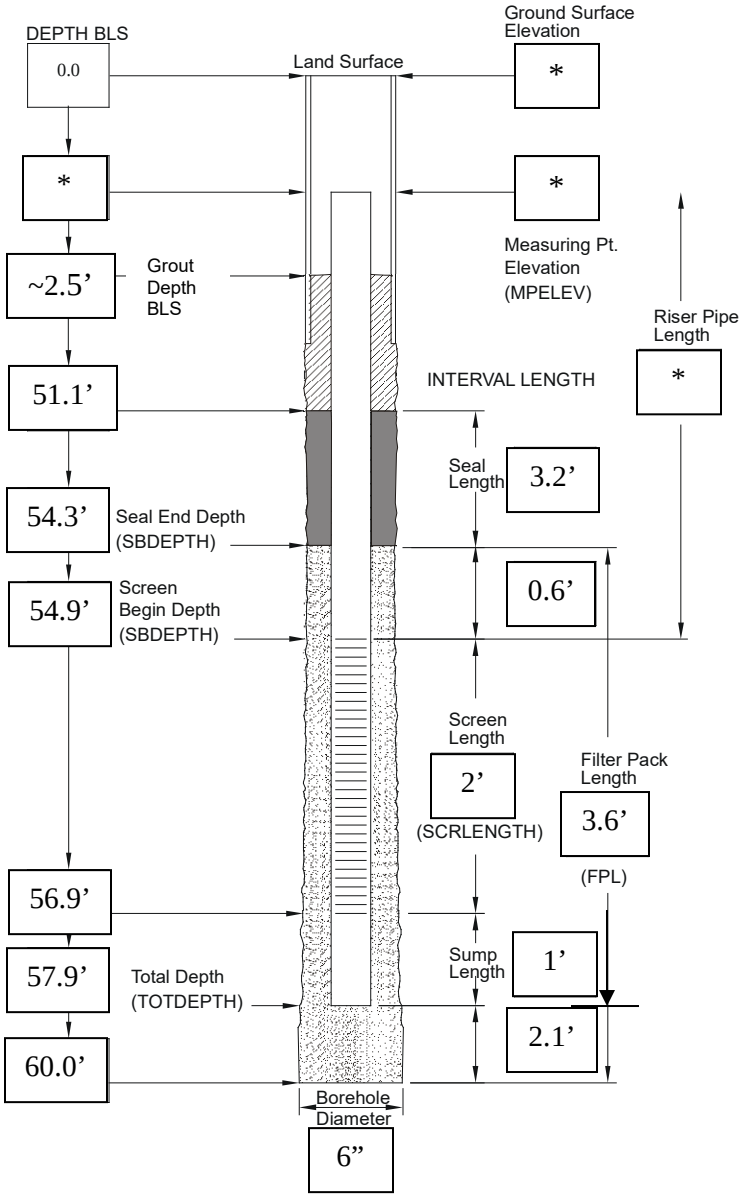
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW105
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/27/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/27/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 55-57 ft BLS

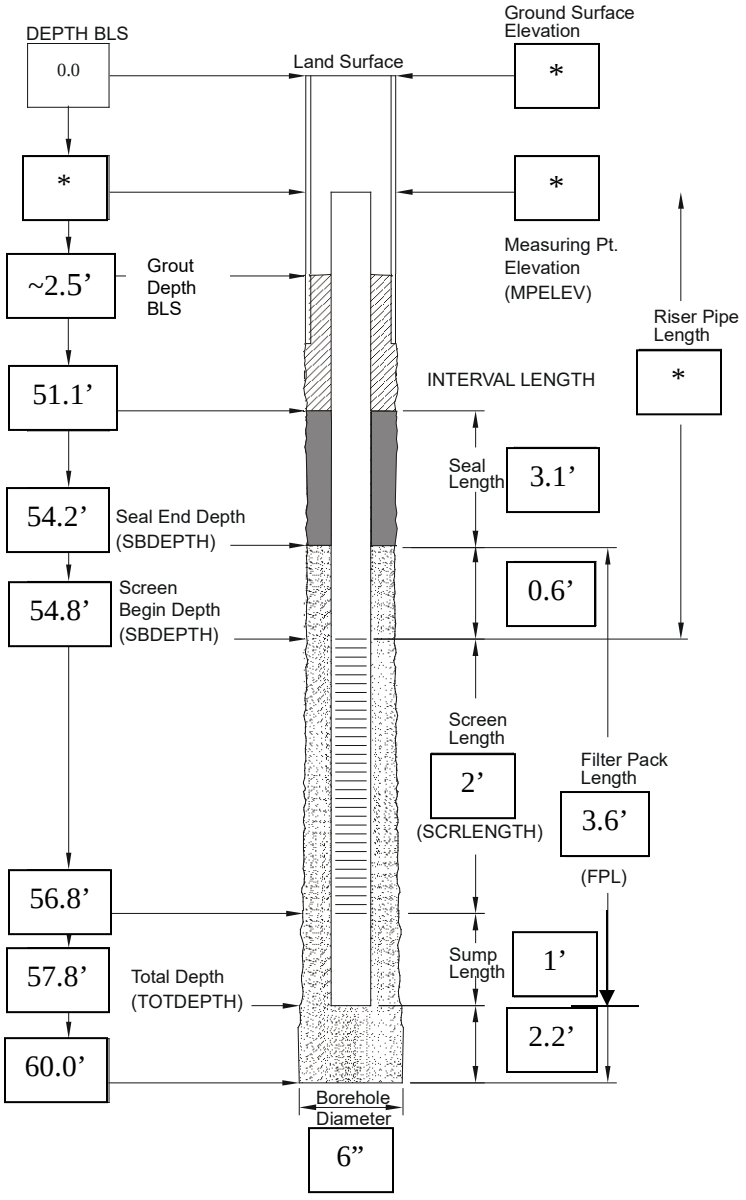
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW106
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Mike Burcham
Signature: Mike Burcham

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/27/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/27/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 55-57 ft BLS

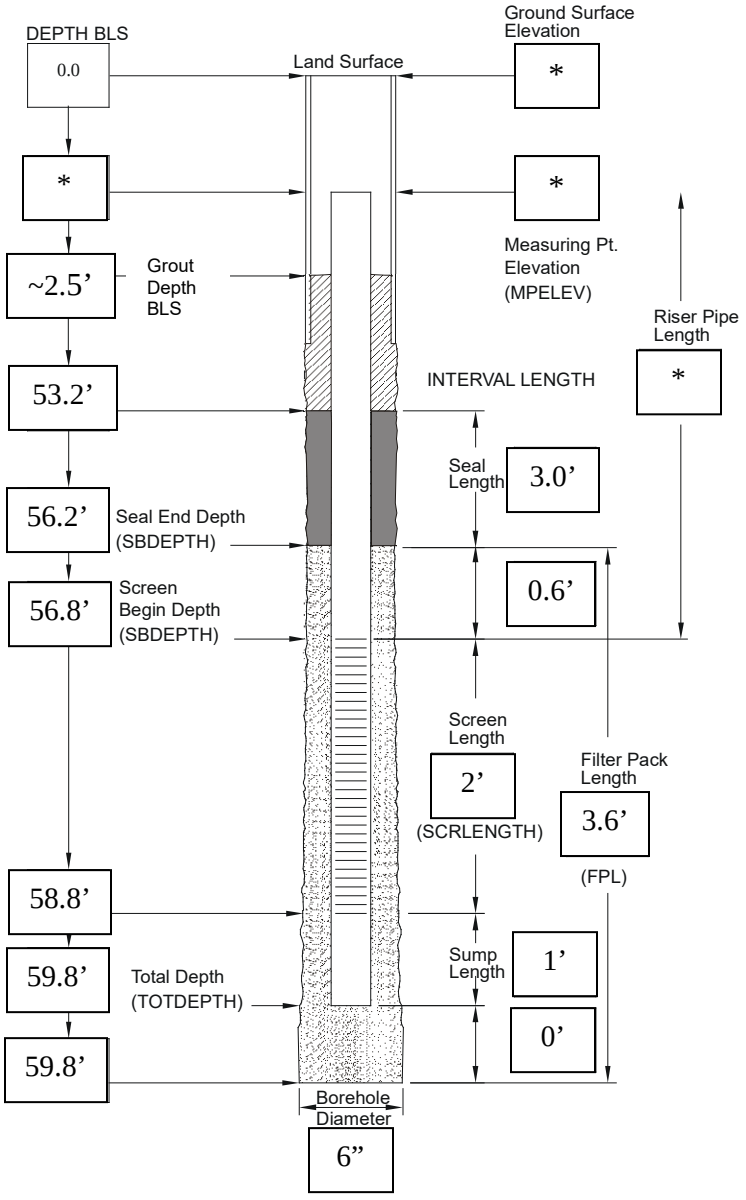
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW107
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/31/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~45 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

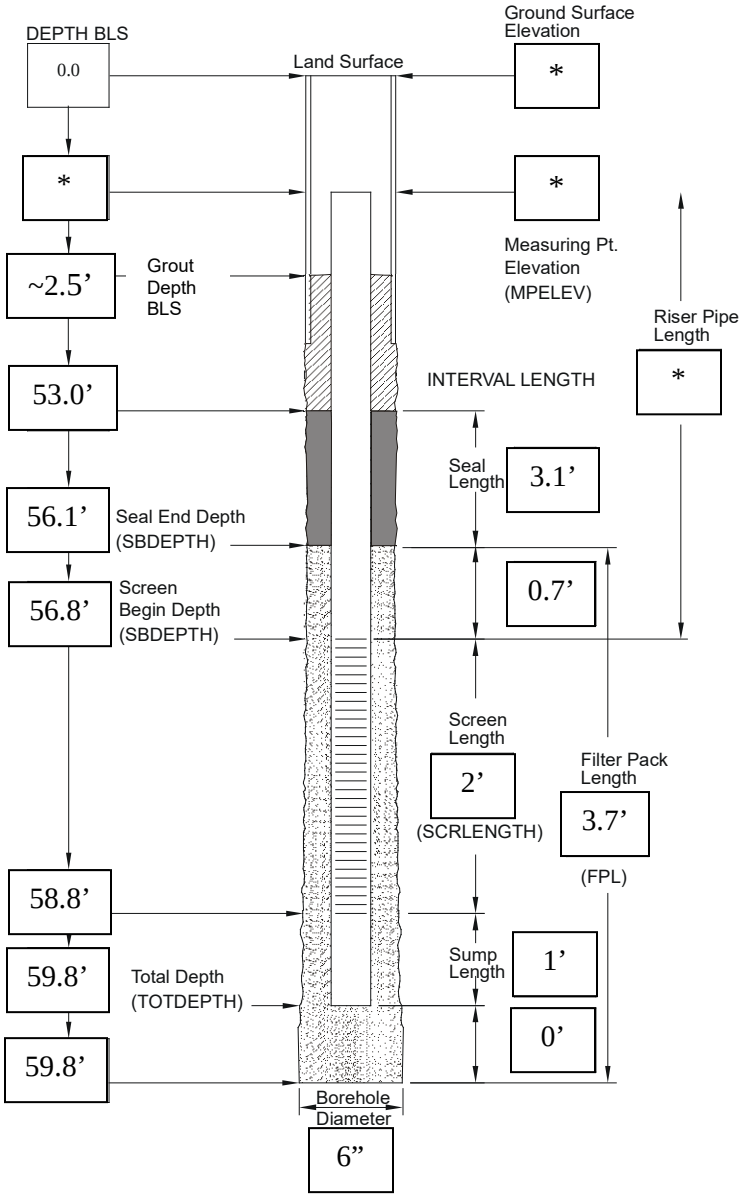
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW108
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASWs

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/31/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

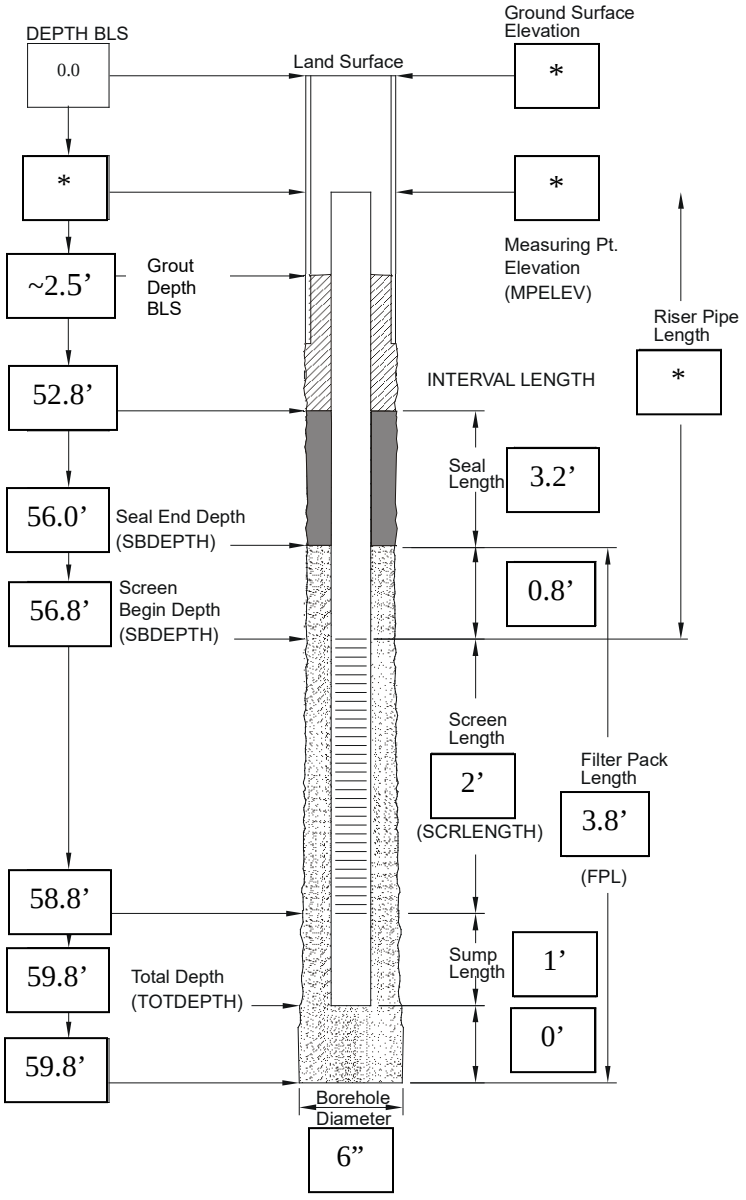
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW109
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/31/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

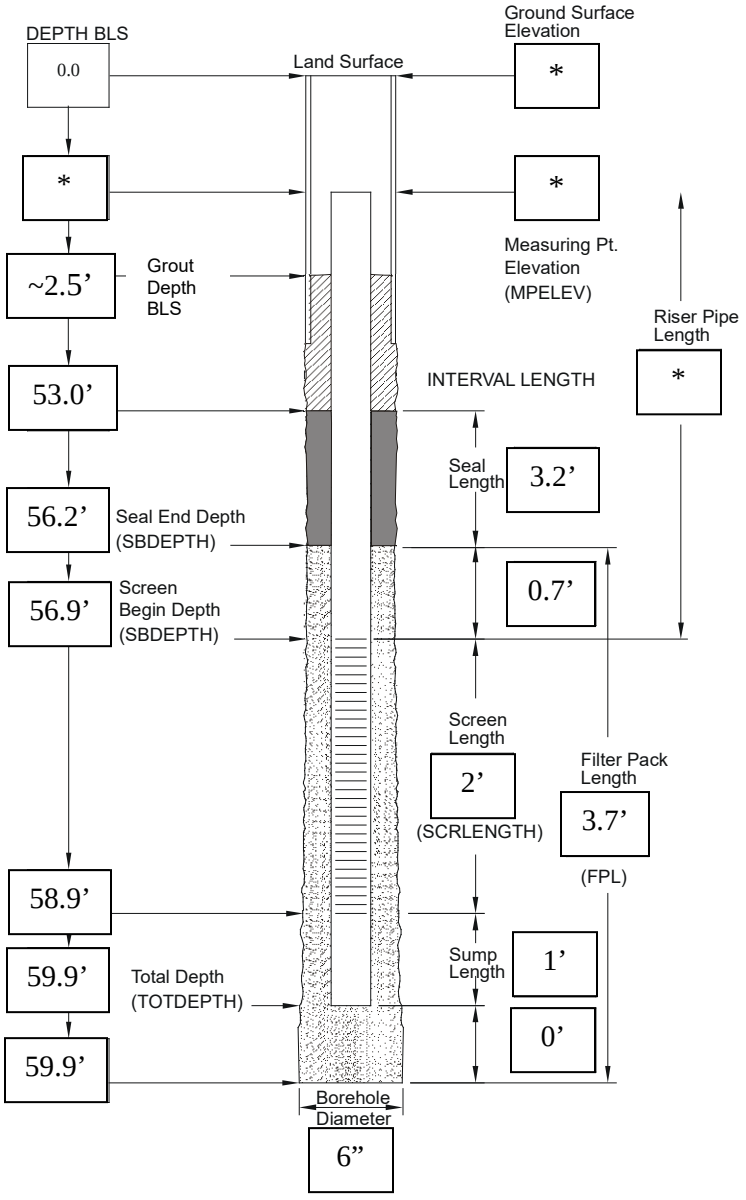
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW110
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/1/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

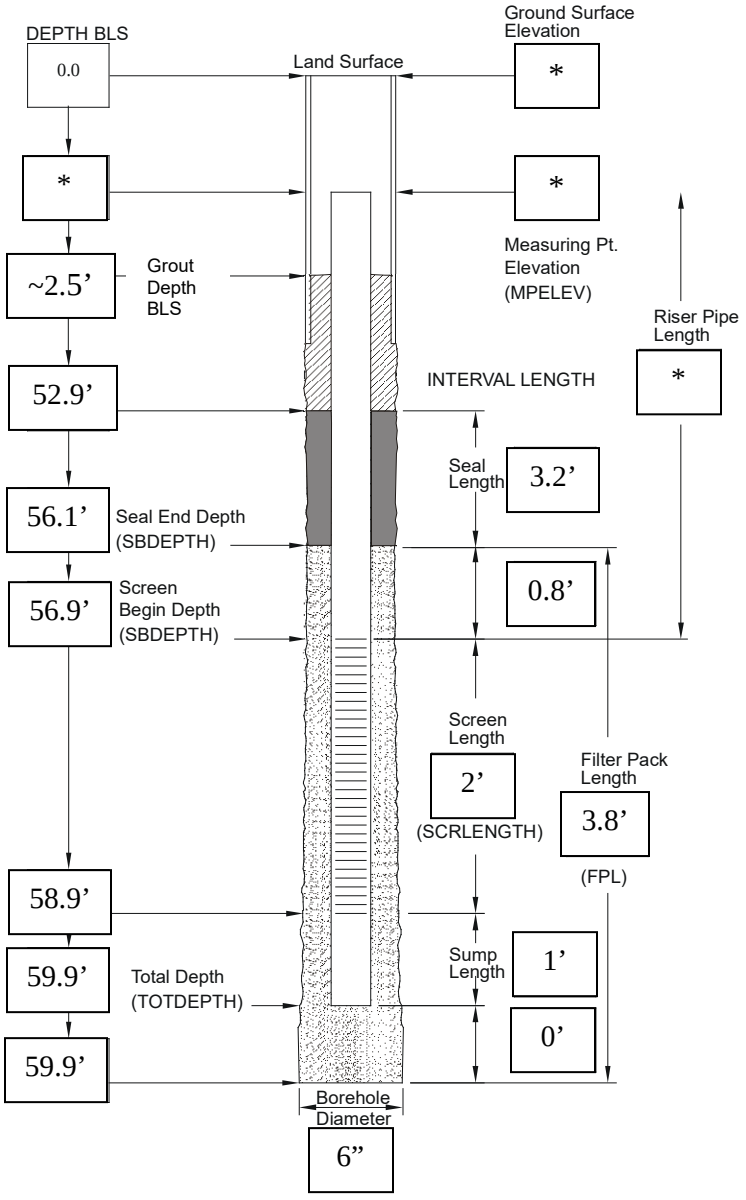
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW111
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/2/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

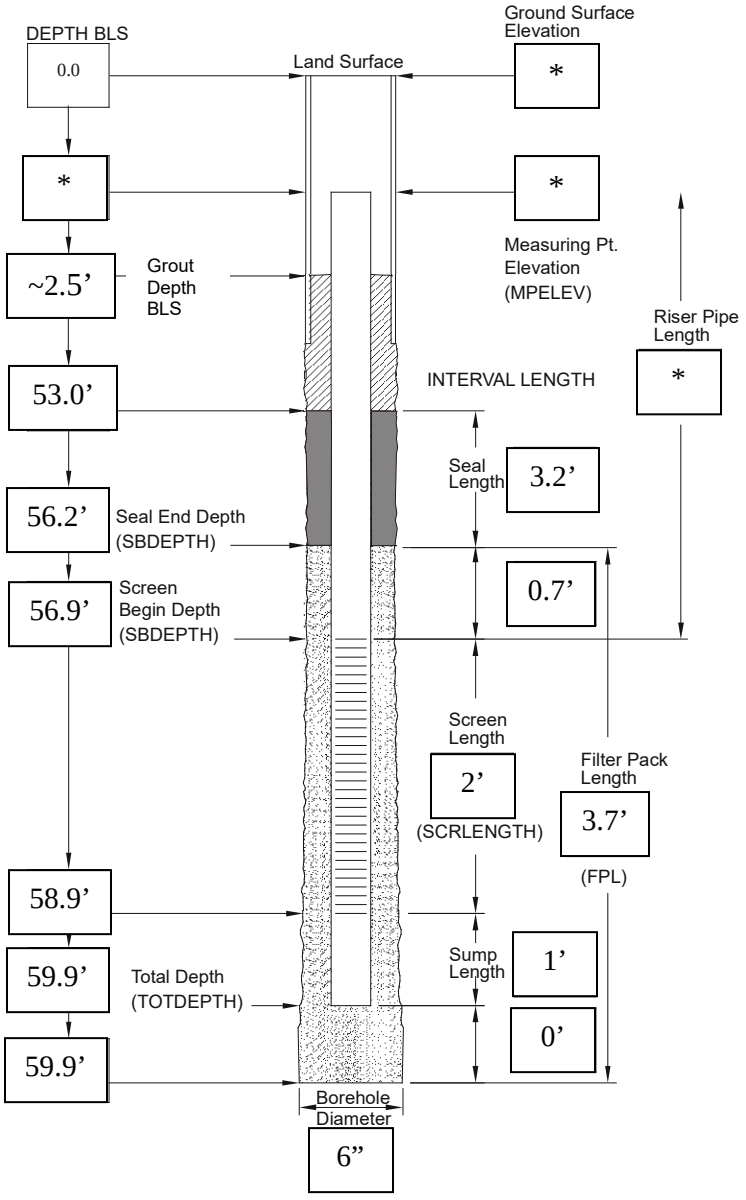
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW112
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/1/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

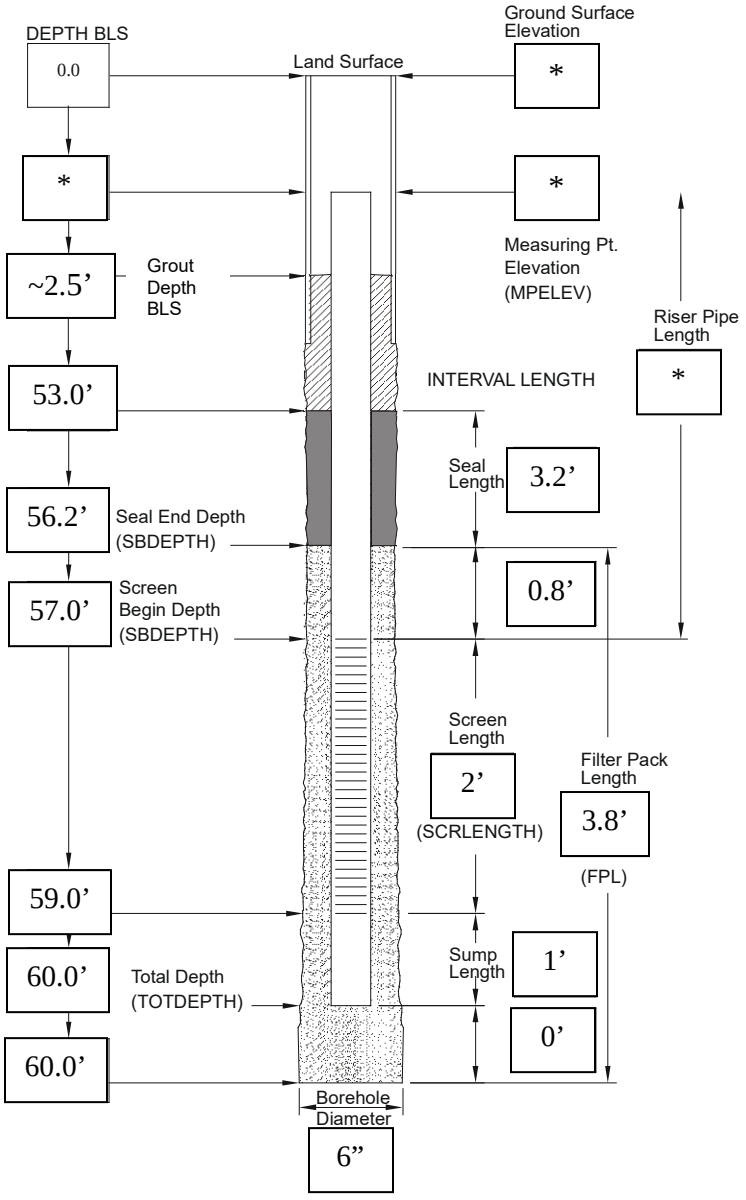
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW113
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/1/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

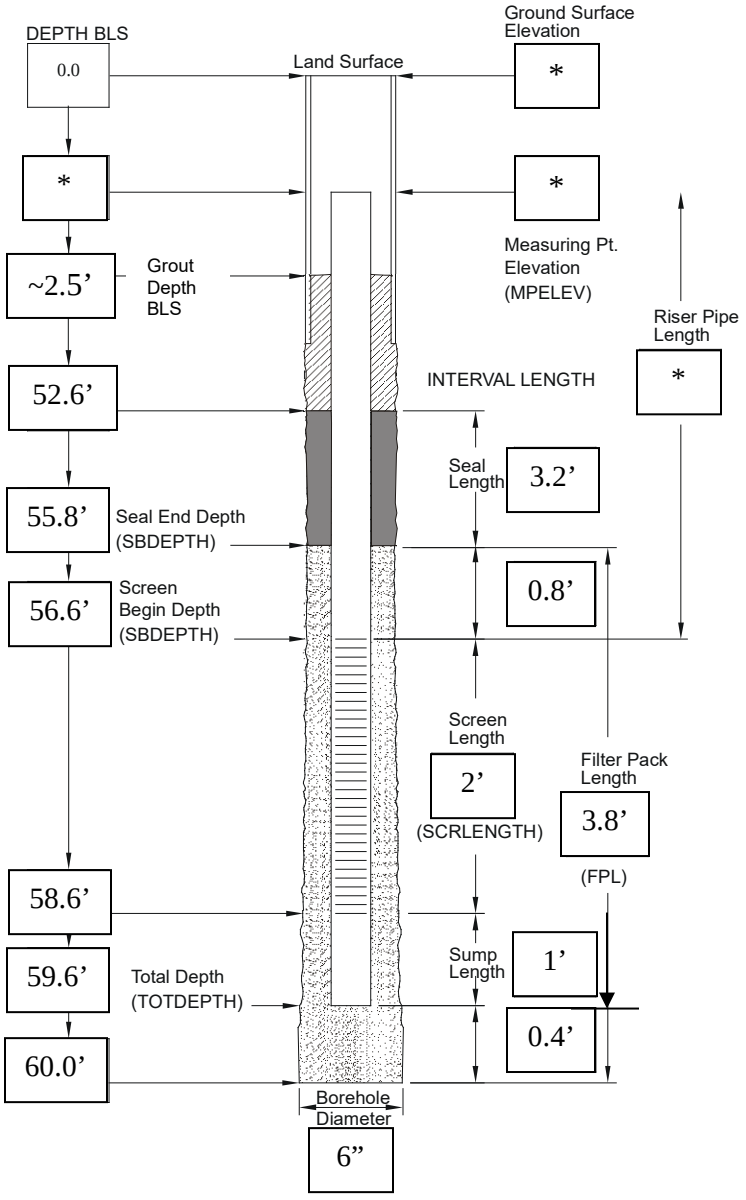
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW114
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASWs
Screened 56.5-58.5 ft BLS (sandy clay at 58.5 ft BLS)

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/1/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

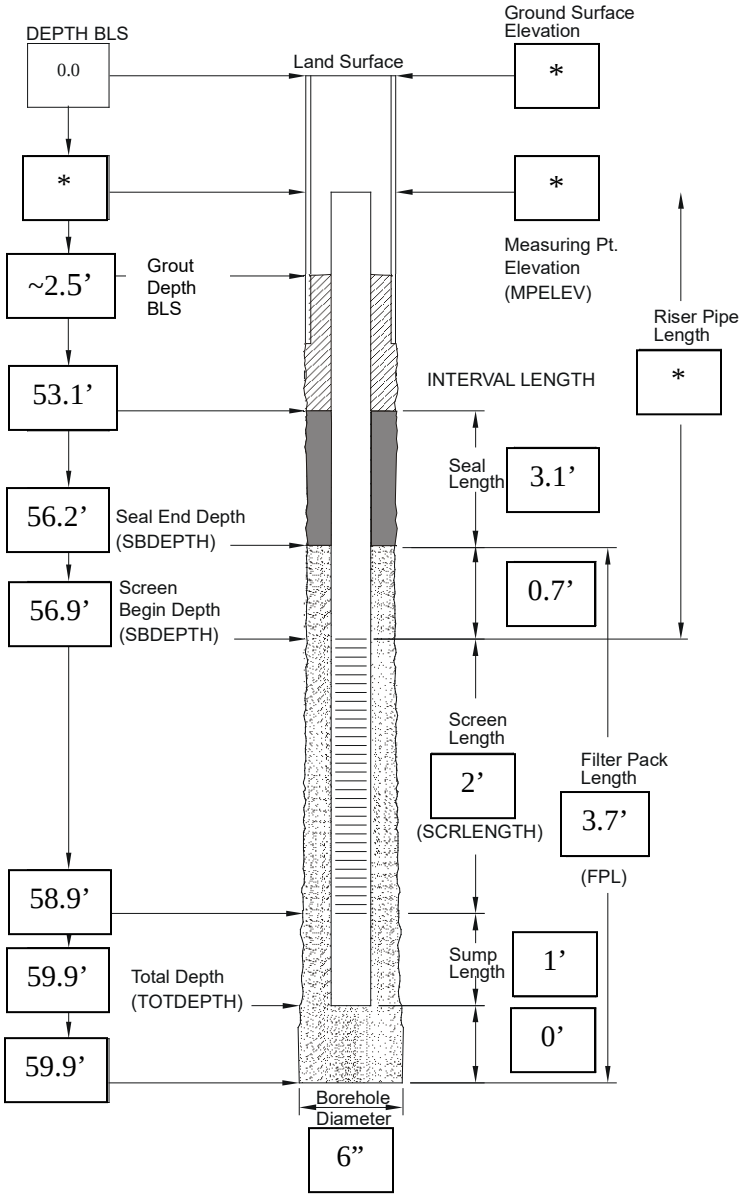
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW115
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/1/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~1 hour
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

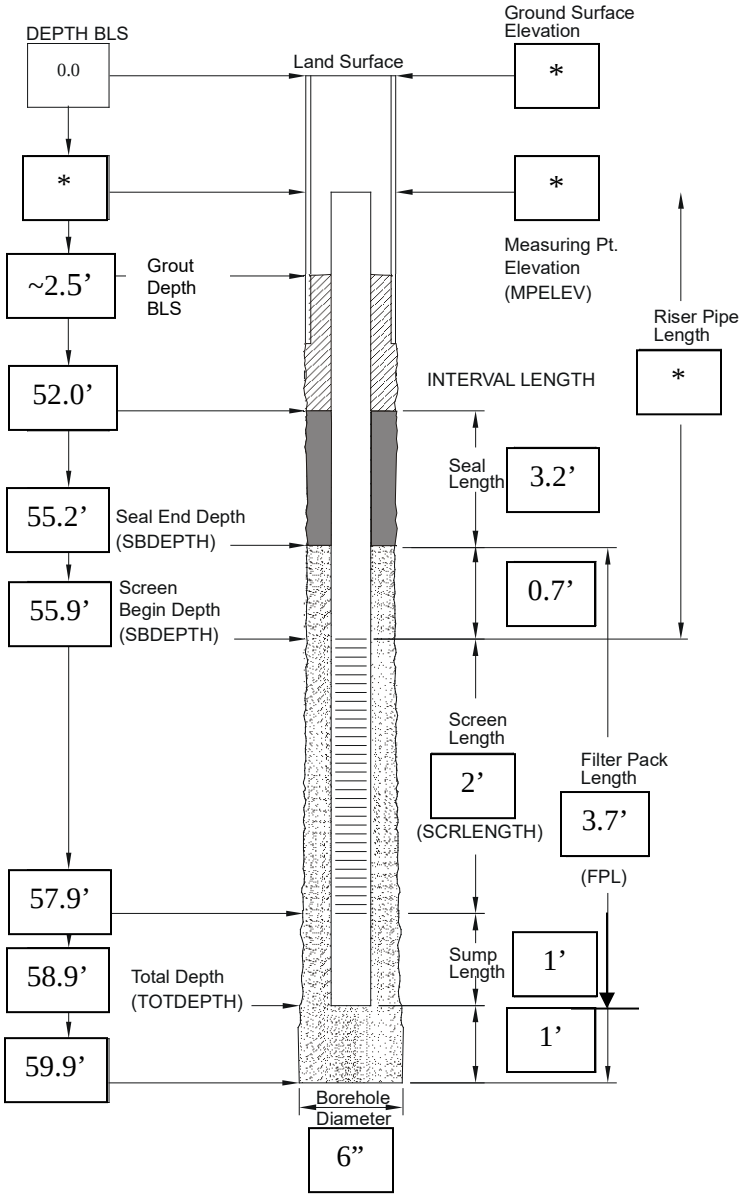
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW116
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Whitney Morrison
Signature: Whitney Morrison

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/1/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: None (below water table)
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Screened 56-58 ft BLS (sandy clay at 58.25-58.5 ft BLS)

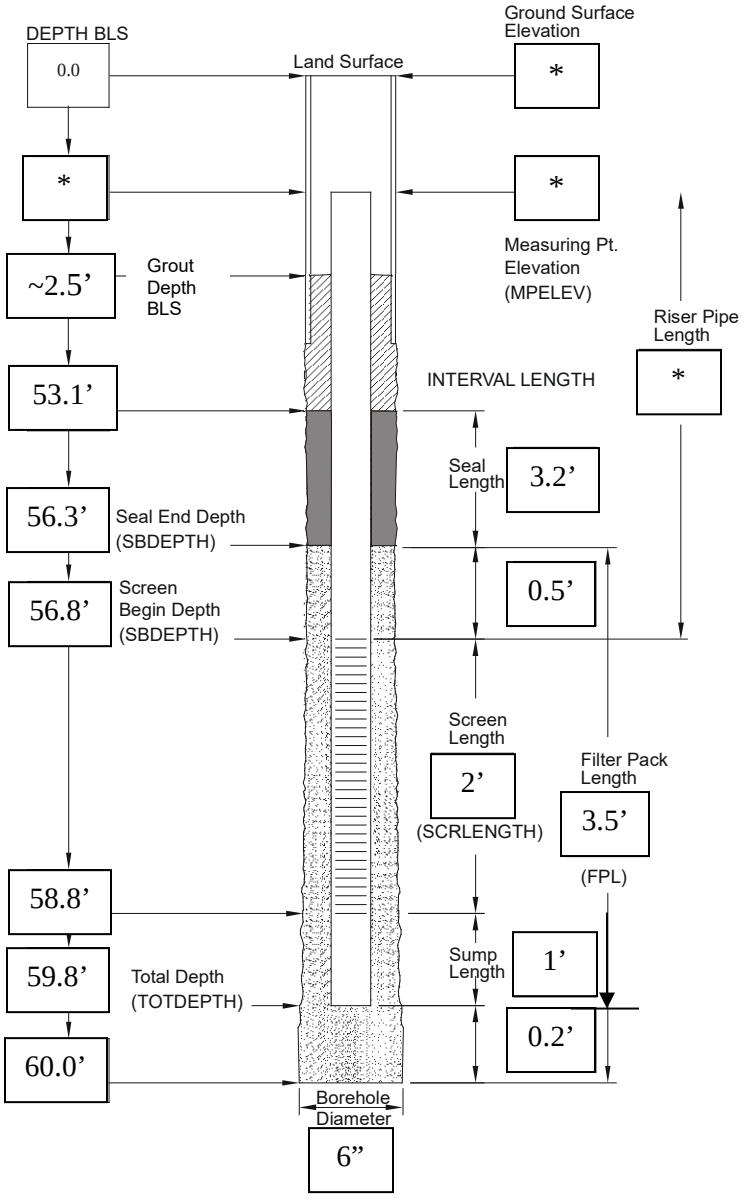
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW117
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/7/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Well screened ~57-59' BLS

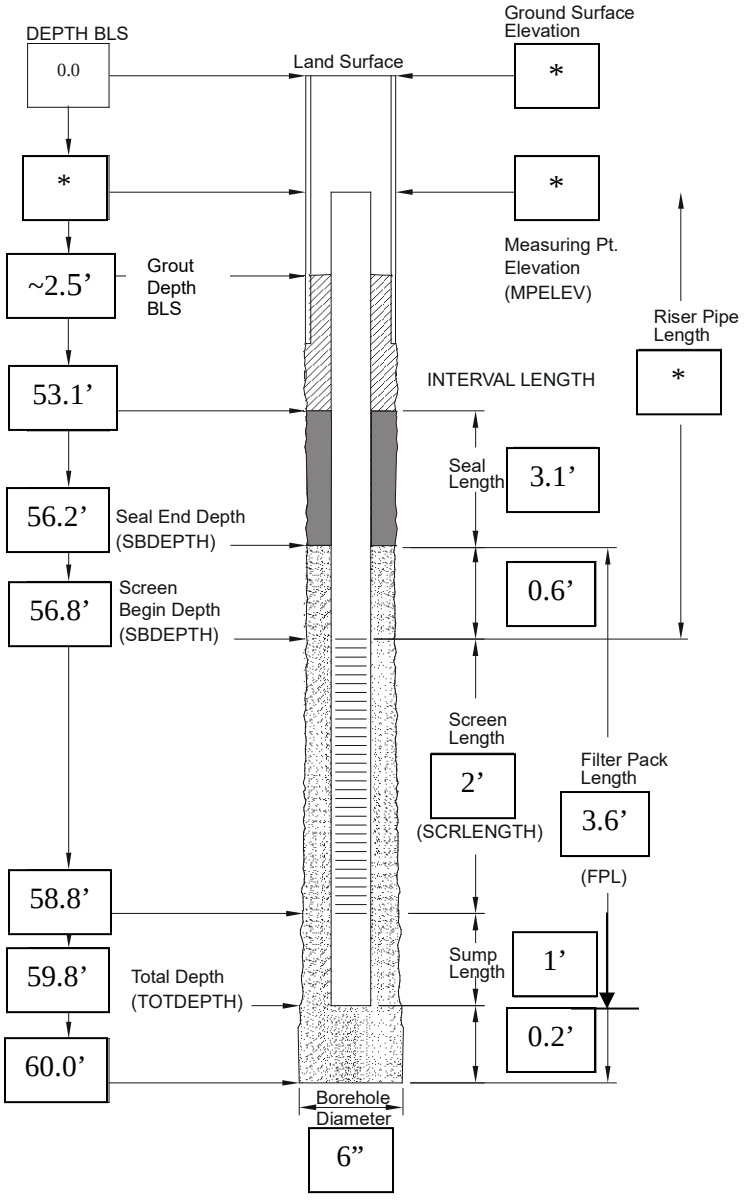
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW118
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/7/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Well screened ~57-59' BLS

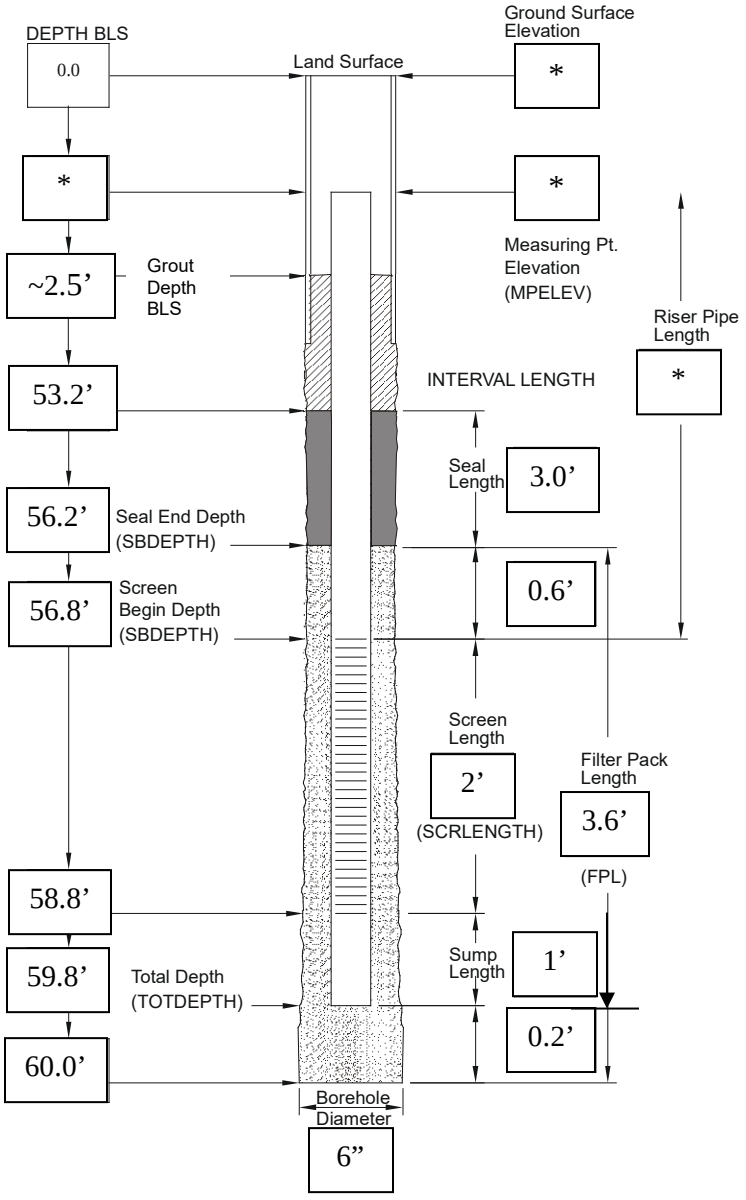
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW119
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/7/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
Well screened ~57-59' BLS

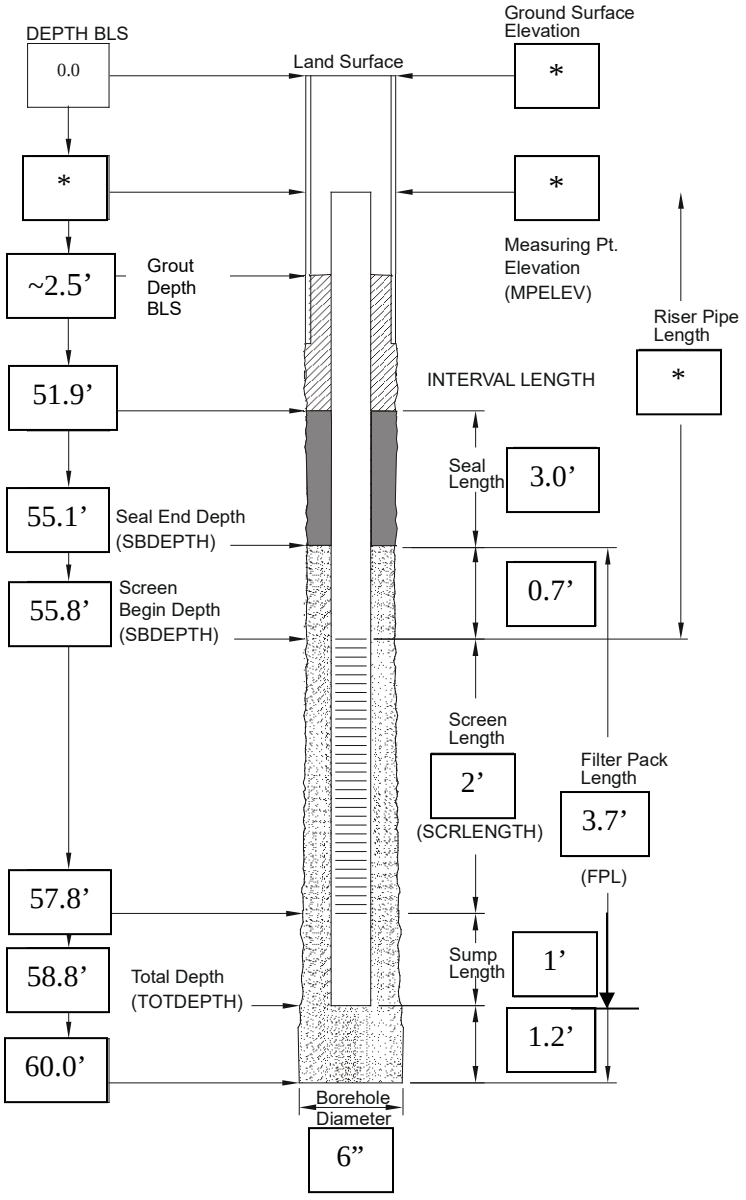
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW120
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC will complete well
Well screened ~56-58 ft BLS

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/7/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~40 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

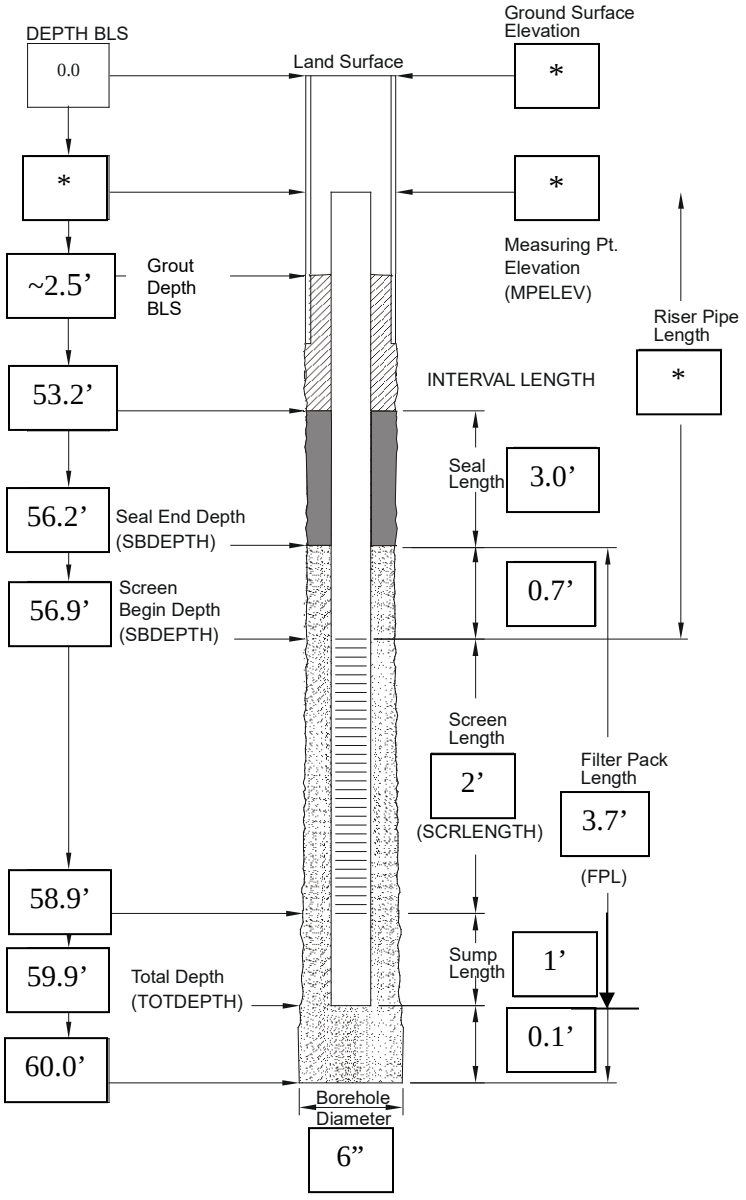
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW121
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will complete well
Well screened ~57-59 ft BLS

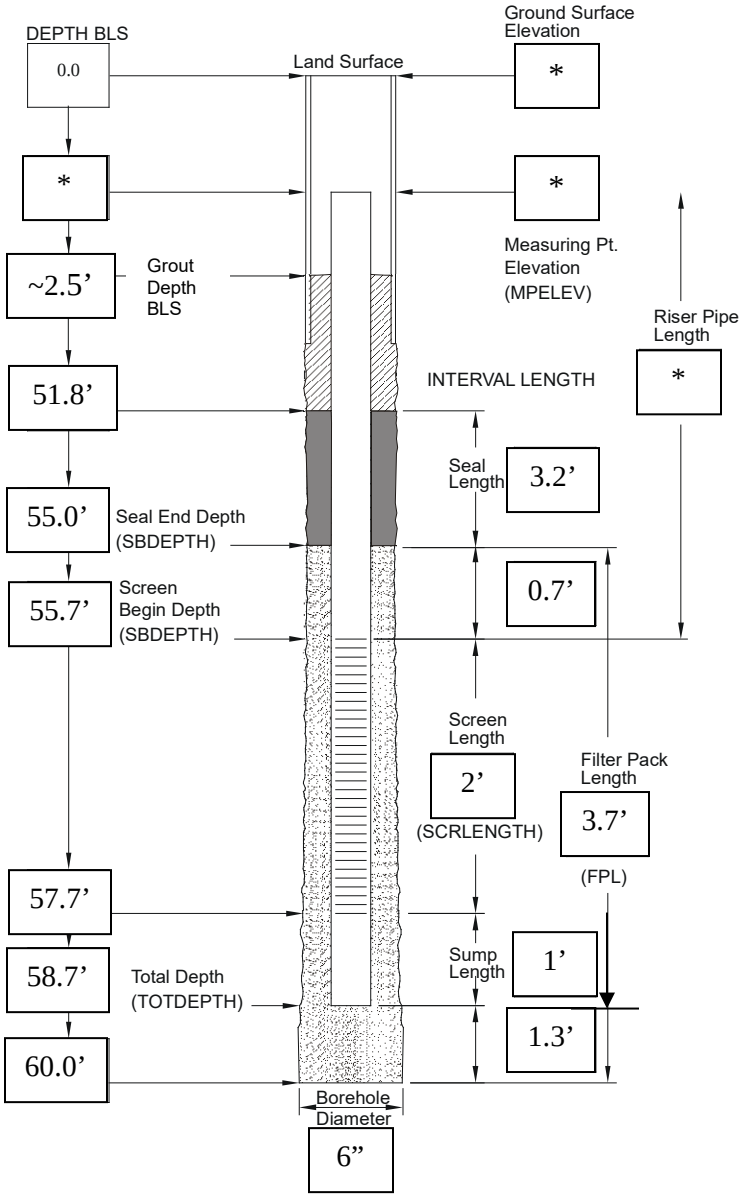
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW122
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will complete well
Well screened ~57-59 ft BLS

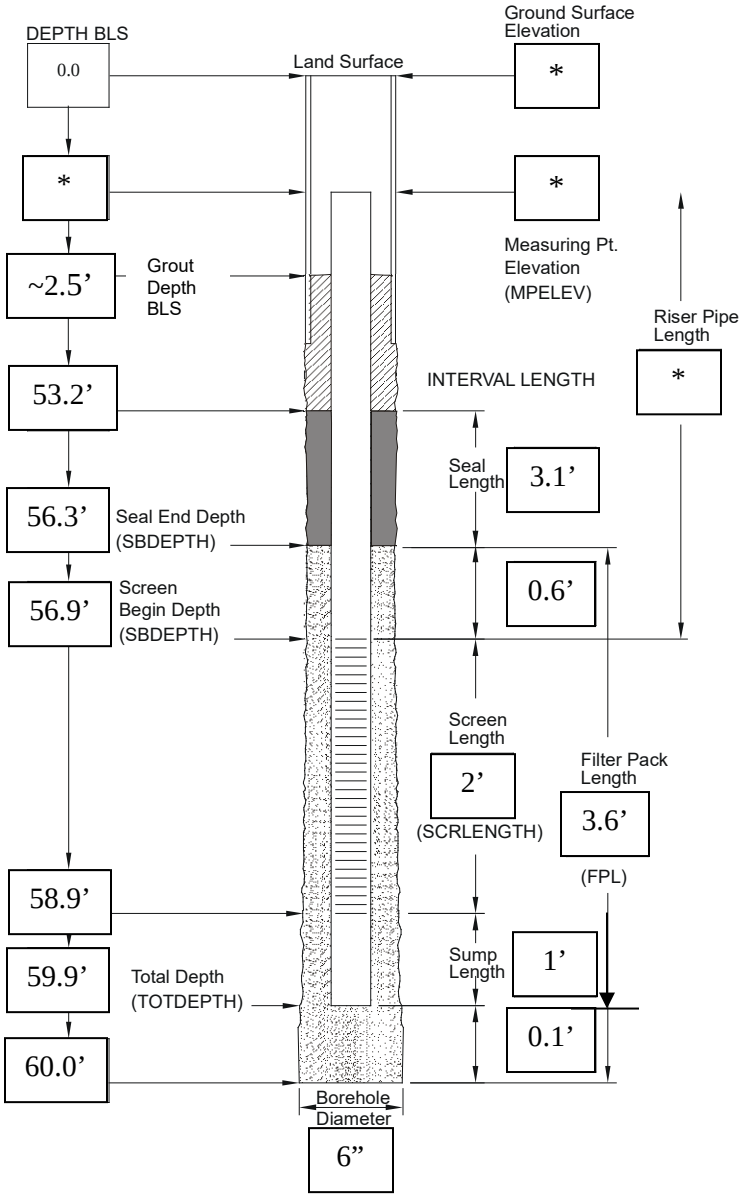
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW123
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC will complete well
Well screened ~57-59 ft BLS

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/7/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

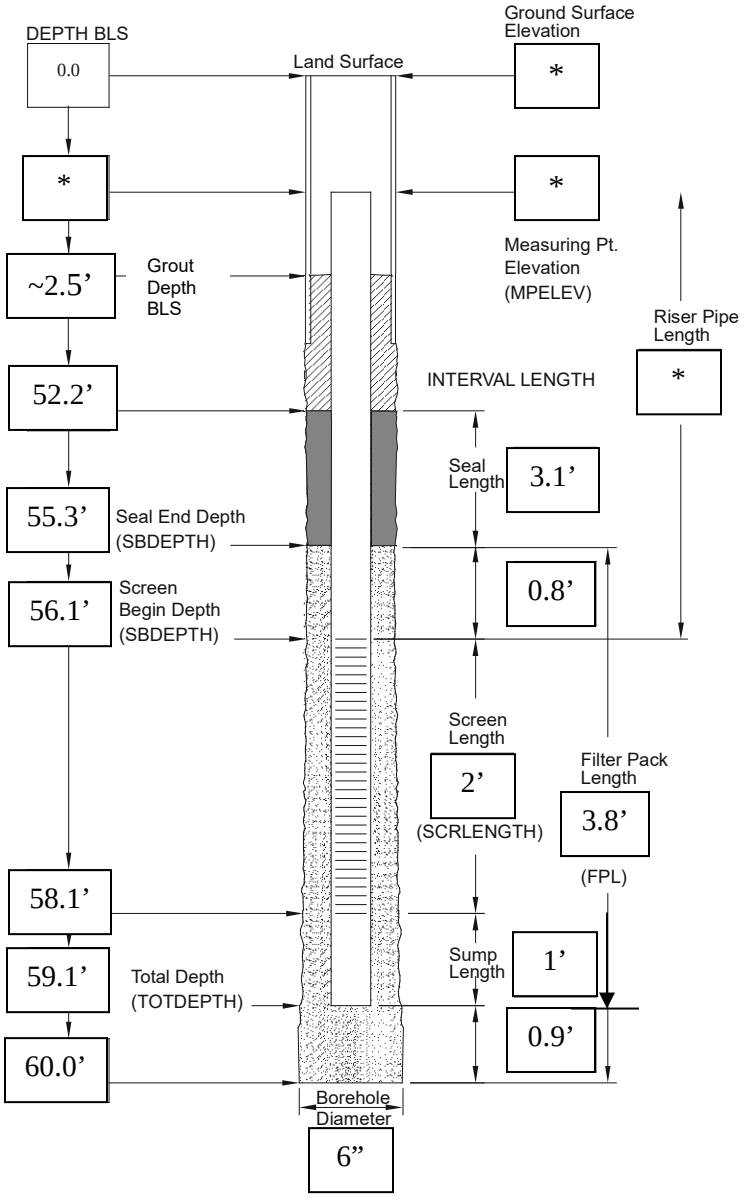
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW124
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/7/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will complete well
Well screened ~56-58 ft BLS

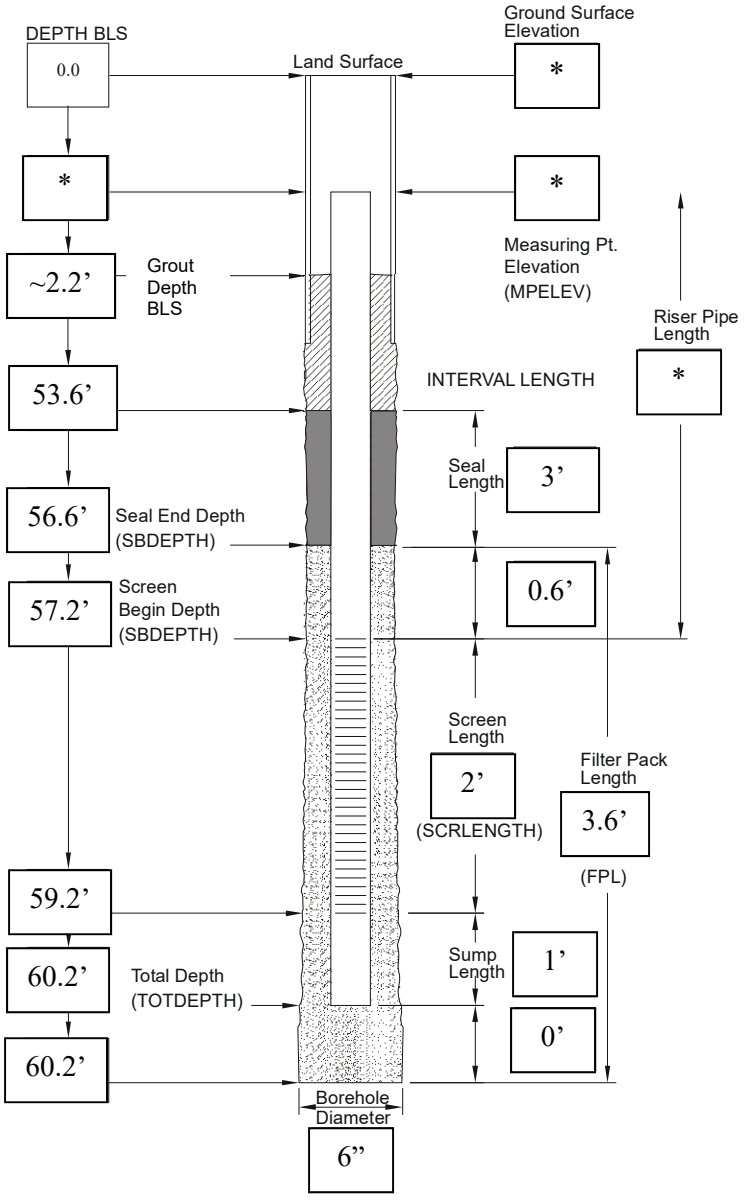
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW125
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/1/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR

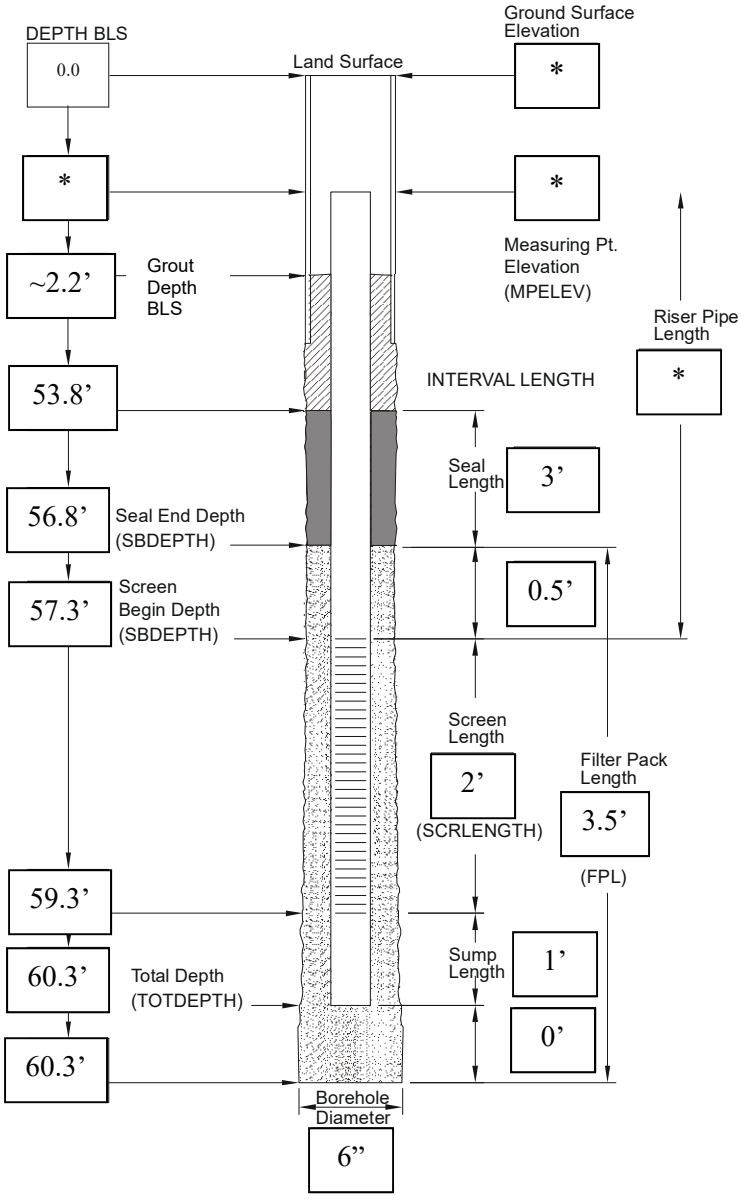
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW126
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/1/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR

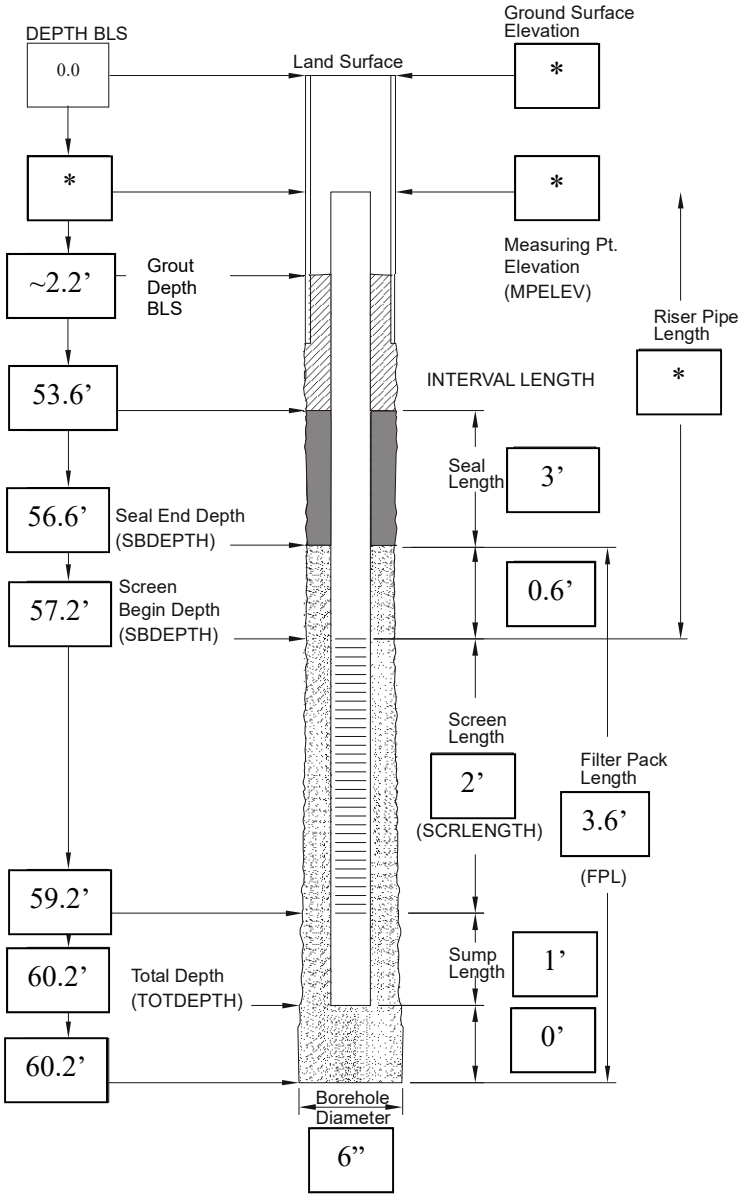
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW127
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/1/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR

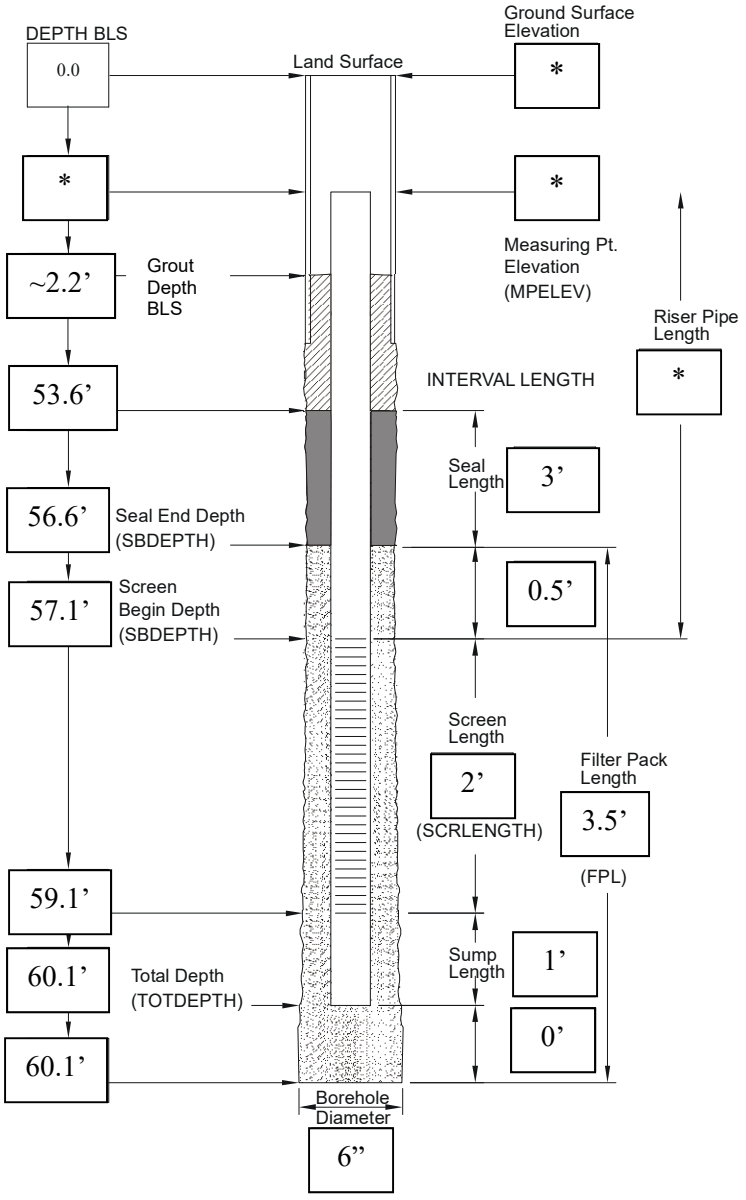
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW128
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/1/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR

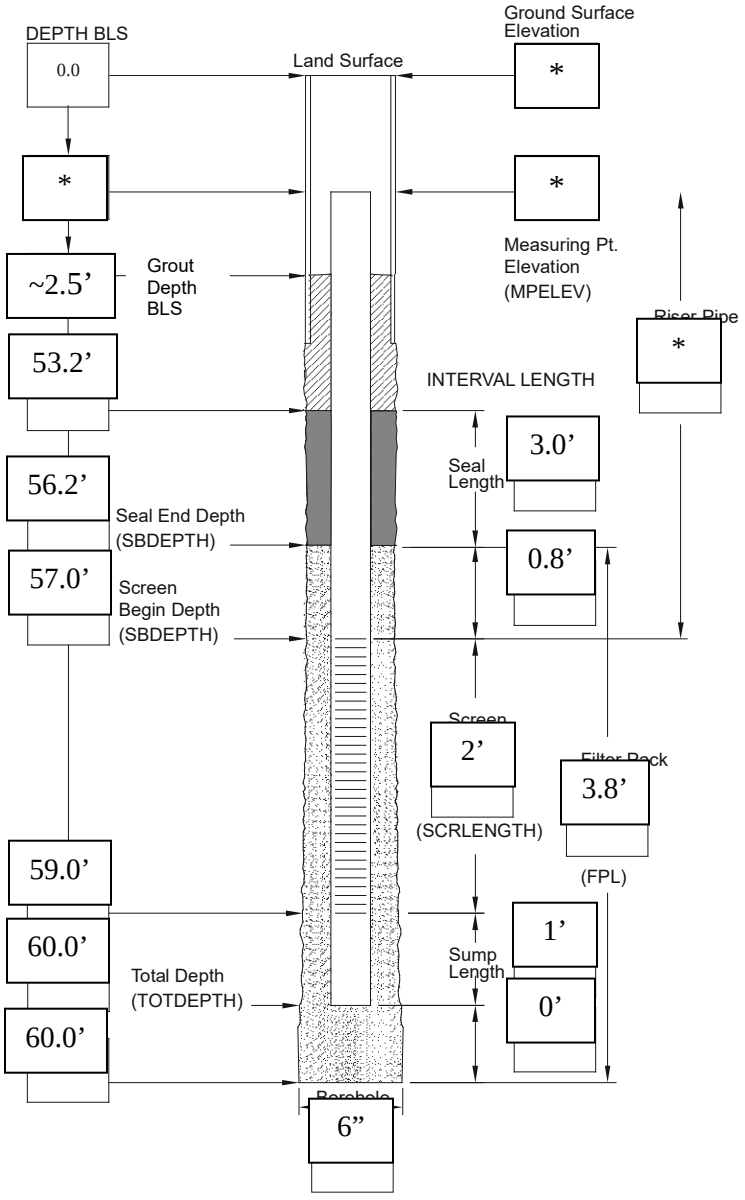
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW129
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/9/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will complete well

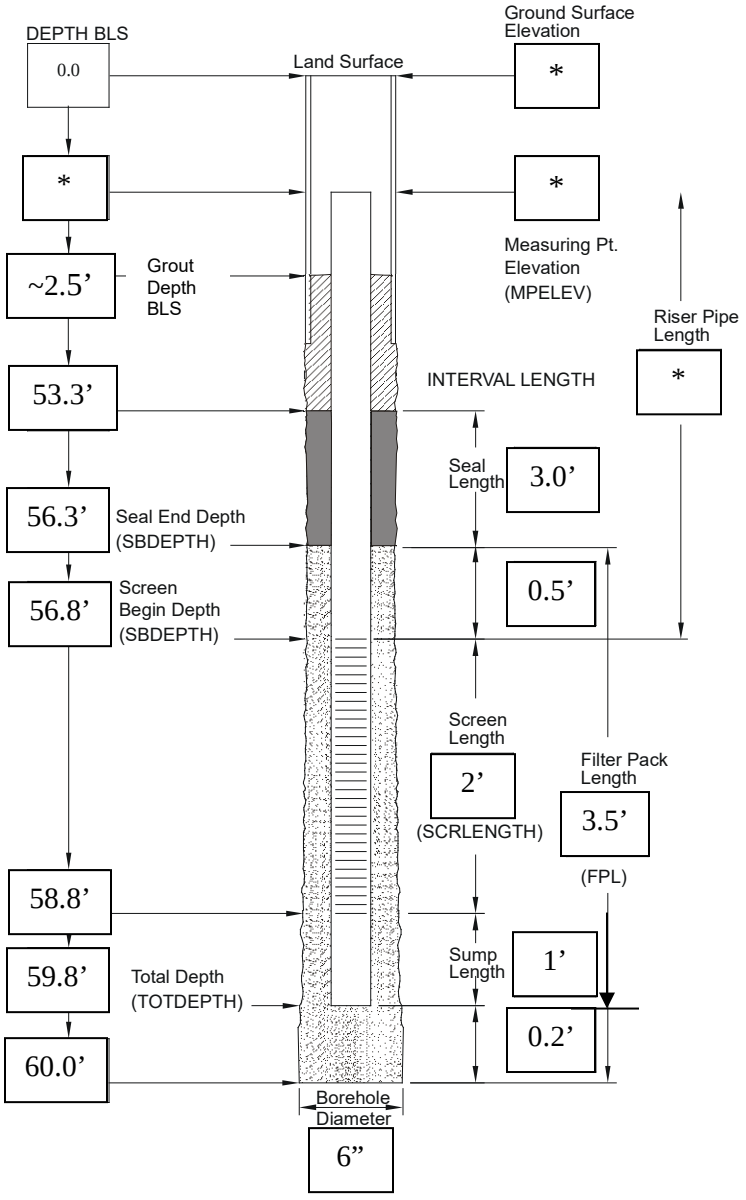
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW130
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/8/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will complete well
Well screened ~57-59 ft BLS

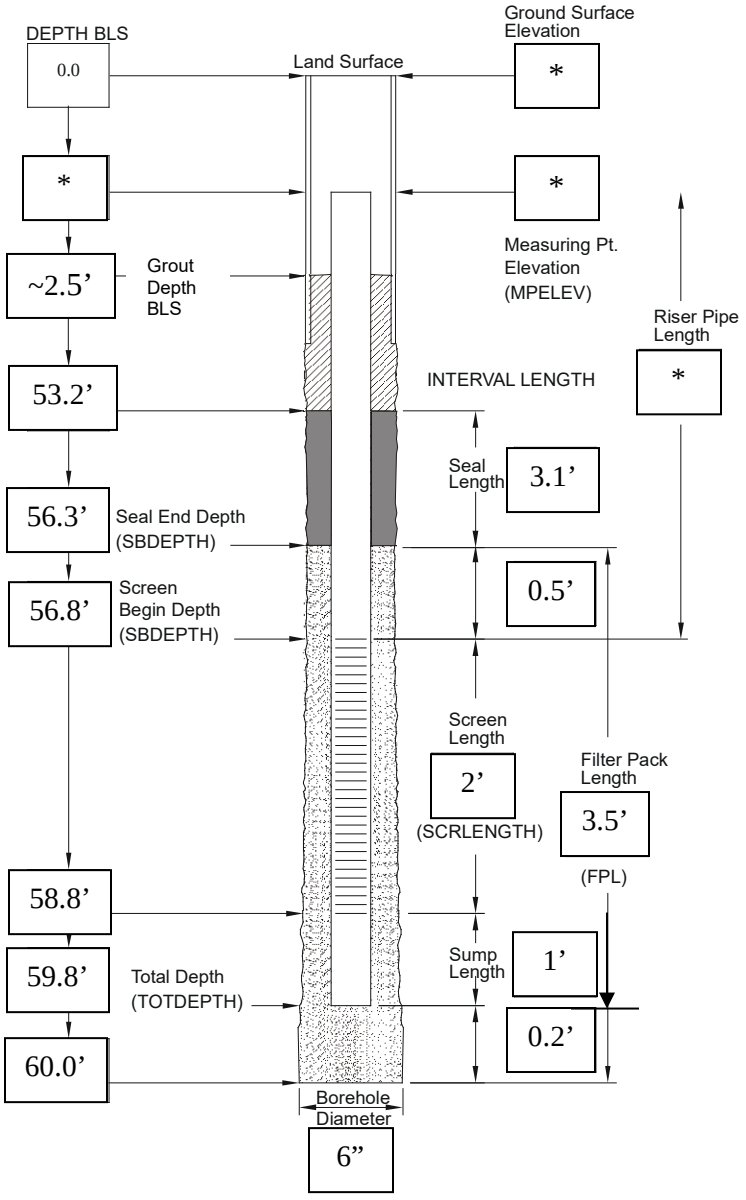
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW131
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/6/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/6/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will complete well
Well screened ~57-59 ft BLS

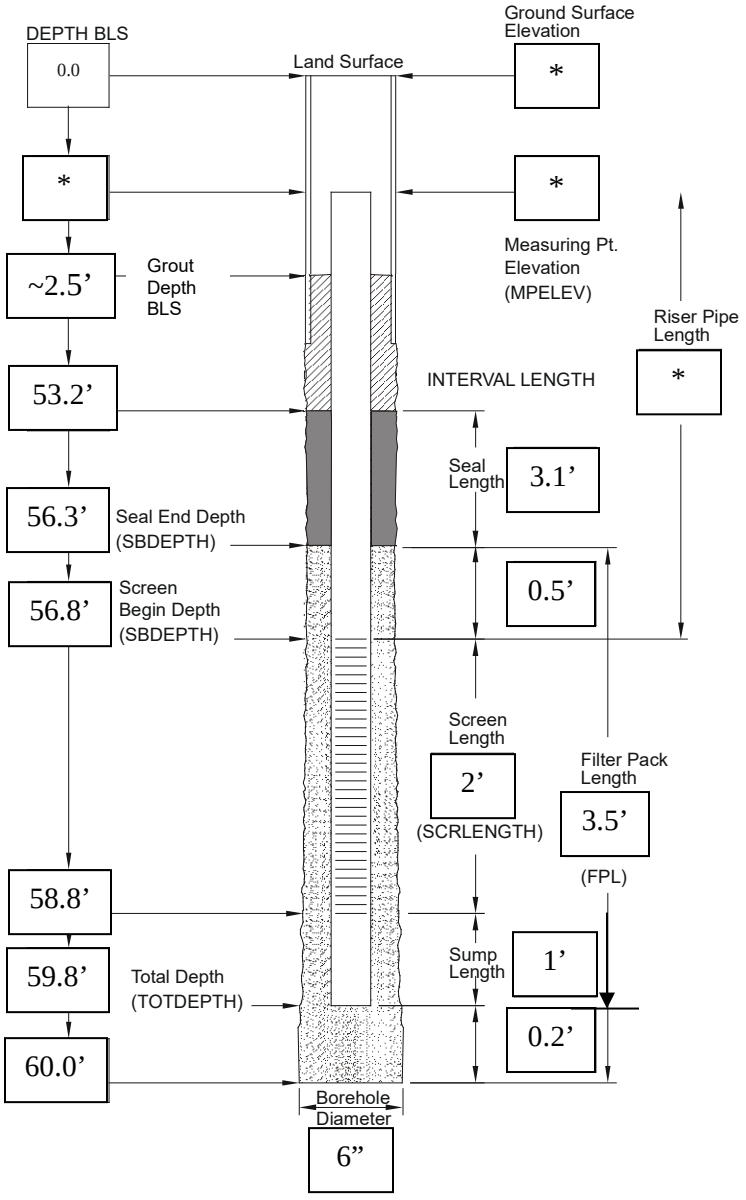
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW132
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/9/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will complete well
Well screened ~57-59 ft BLS

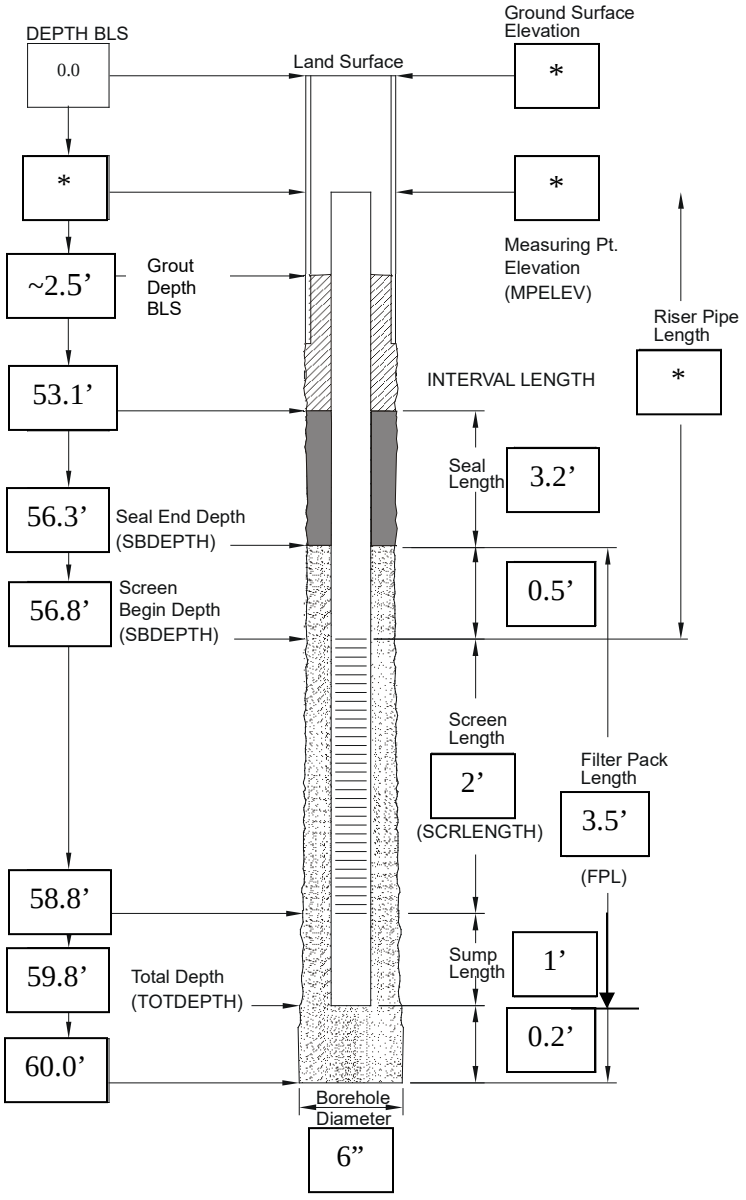
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW133
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/9/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will complete well
Well screened ~57-59 ft BLS

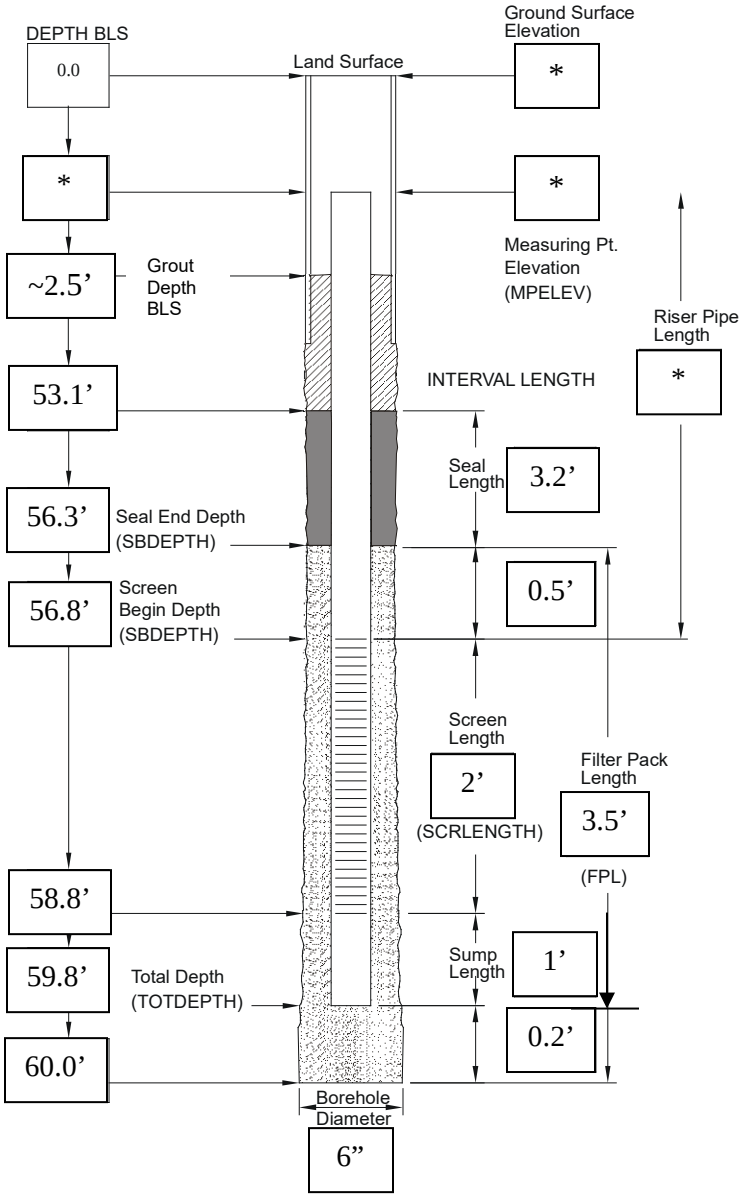
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW134
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*Well will be completed by FECC
Well screened ~57-59 ft BLS

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/8/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

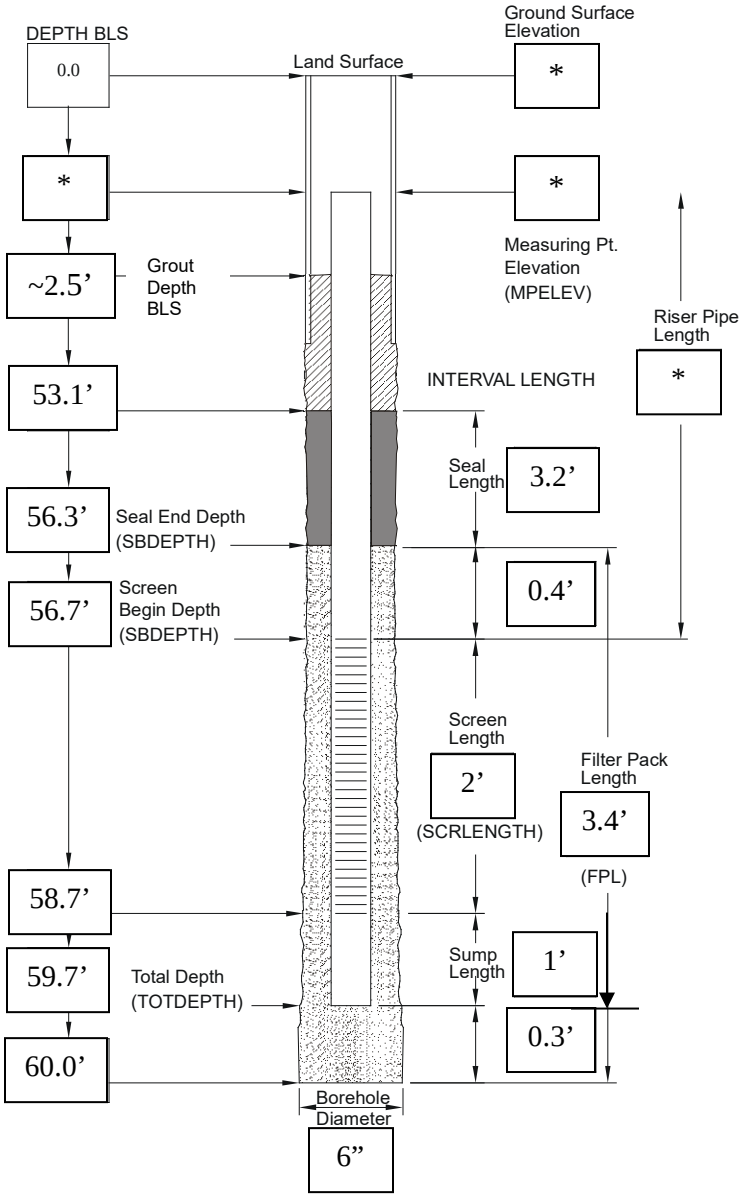
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW135
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/6/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/6/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW
Well screened ~57-59 ft BLS

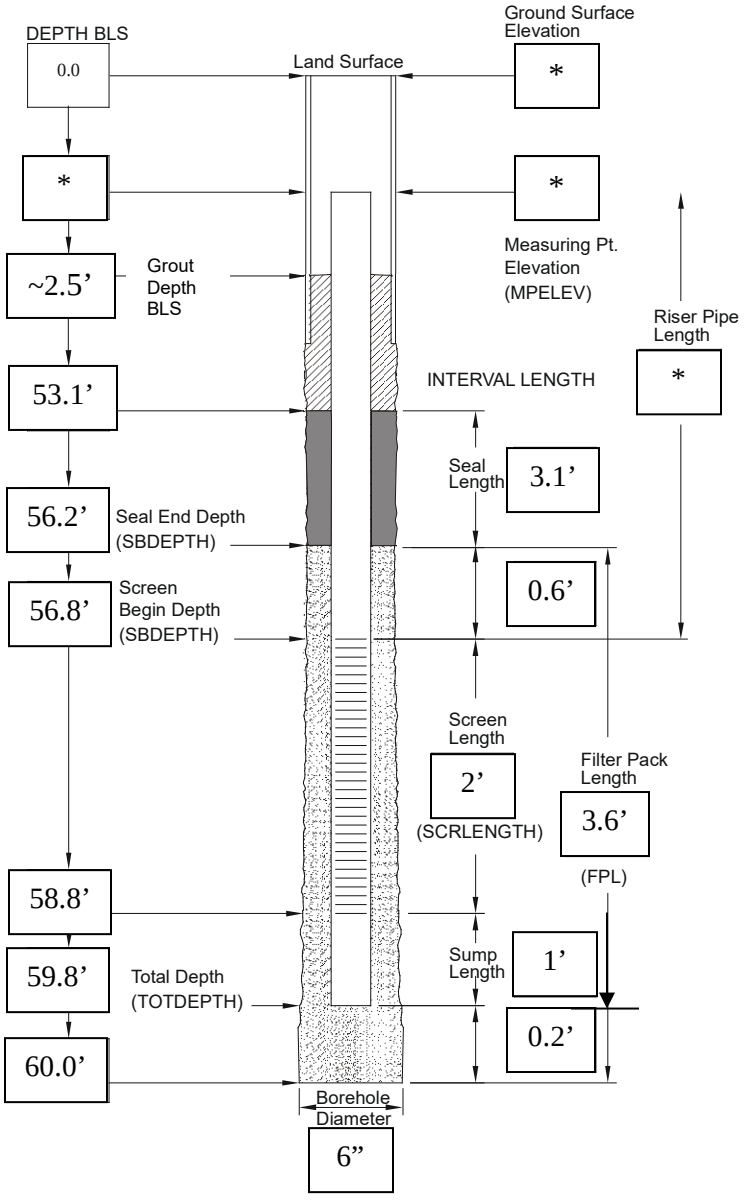
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW136
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/6/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/6/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW
Well screened ~57-59 ft BLS

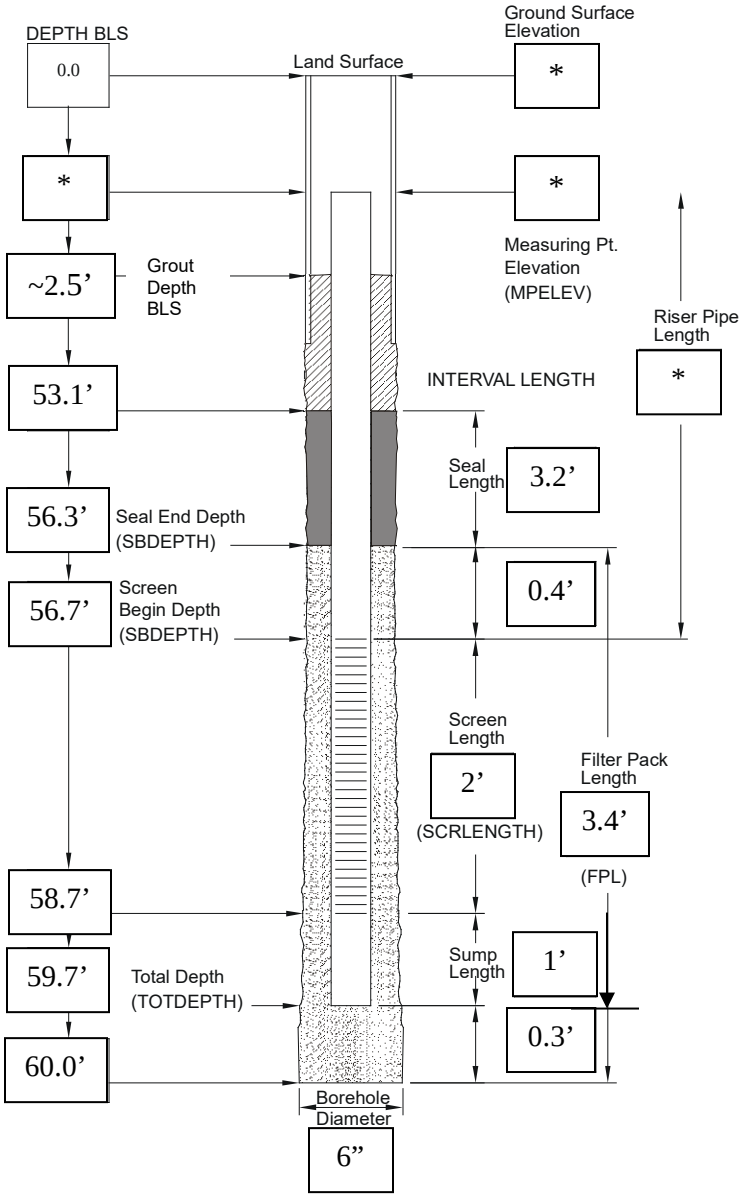
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW137
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASW
Well screened ~57-59 ft BLS

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/9/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

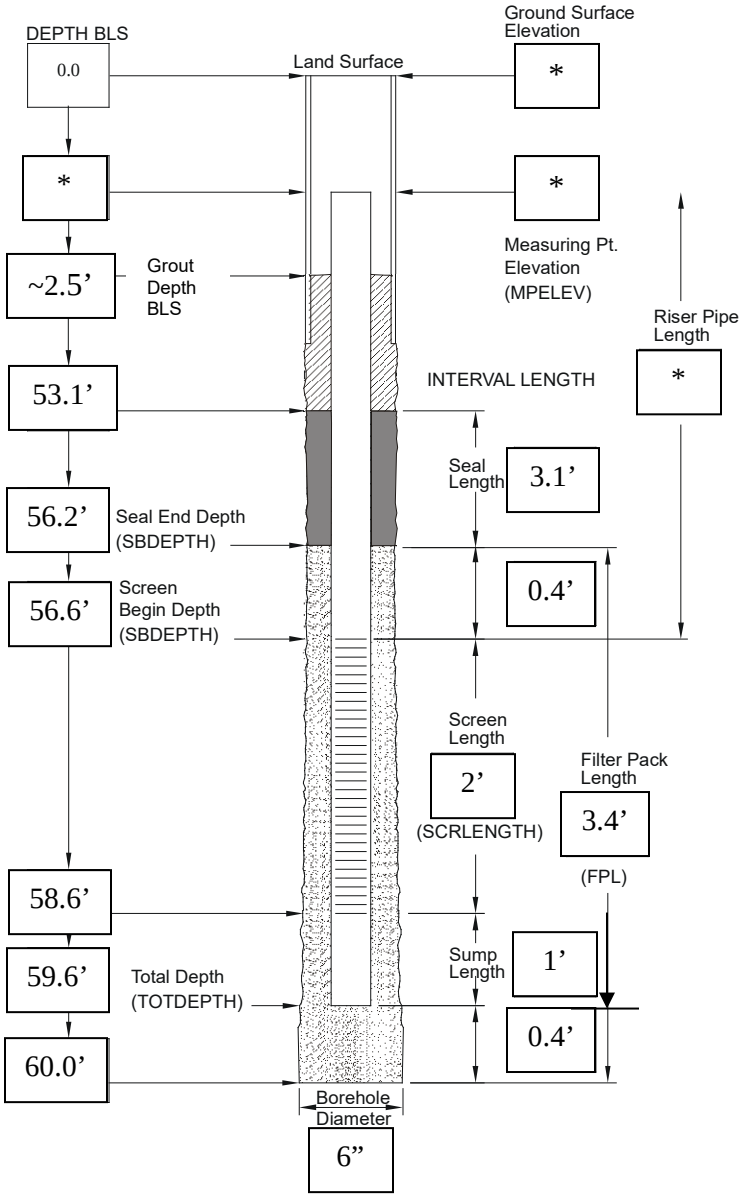
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW138
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW
Well screened ~57-59 ft BLS

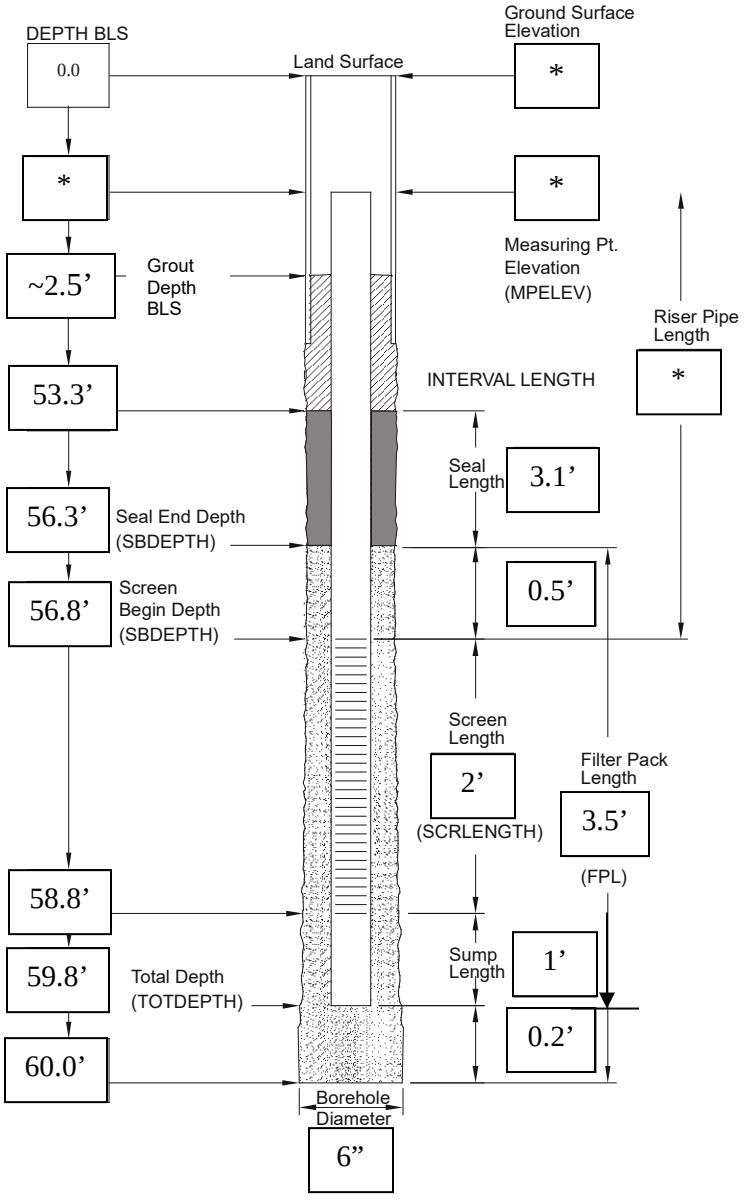
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW139
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/6/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/6/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW
Well screened ~57-59 ft BLS

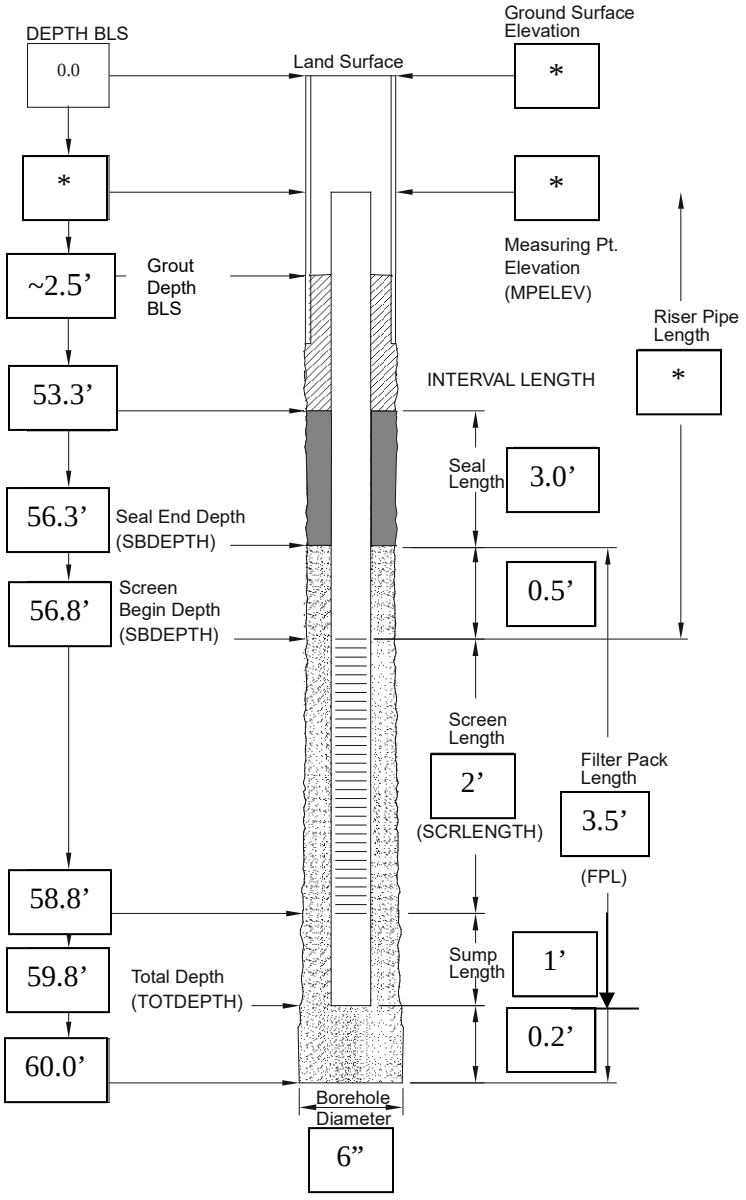
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW140
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/9/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 40 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW
Well screened ~57-59 ft BLS

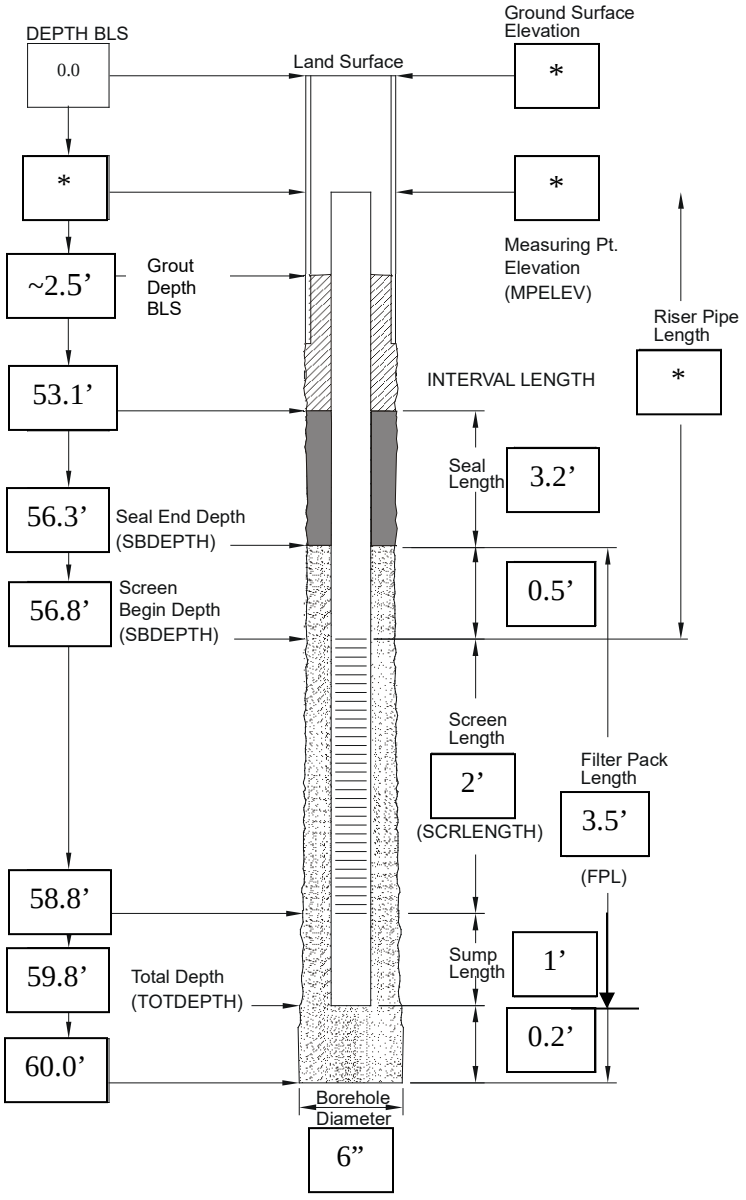
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW141
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASW
Well screened ~57-59 ft BLS

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/9/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

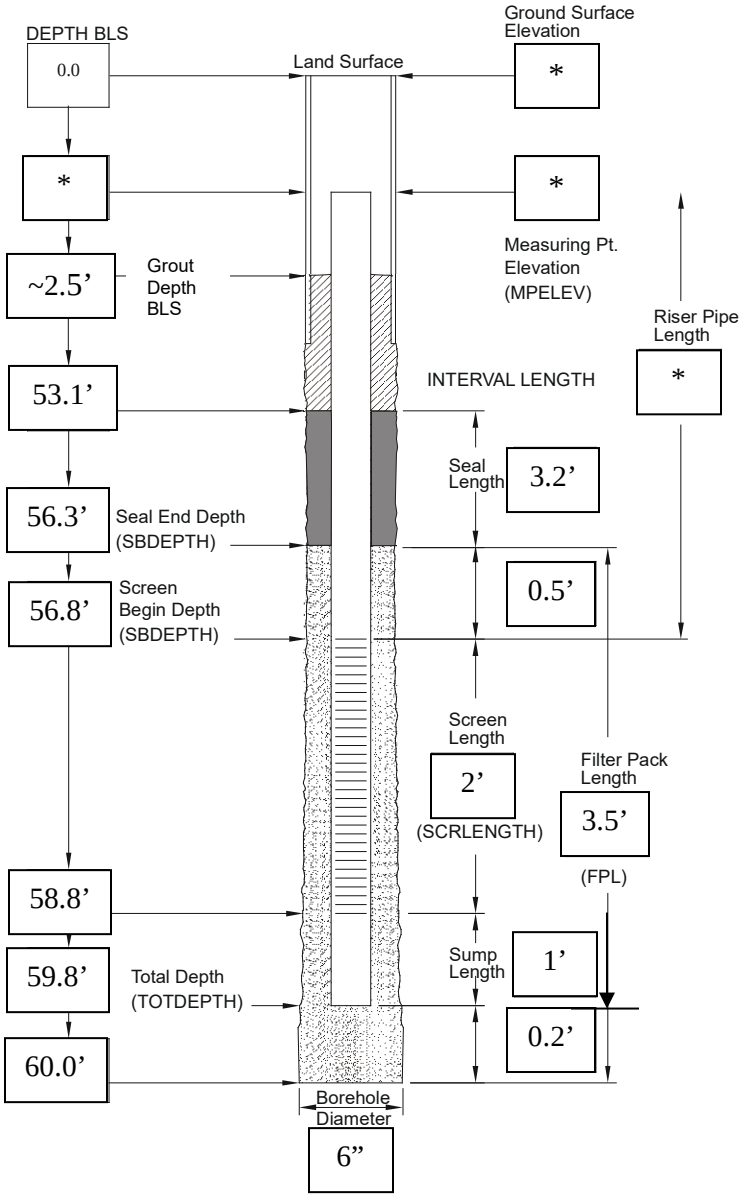
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW142
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~40 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW
Well screened ~57-59 ft BLS

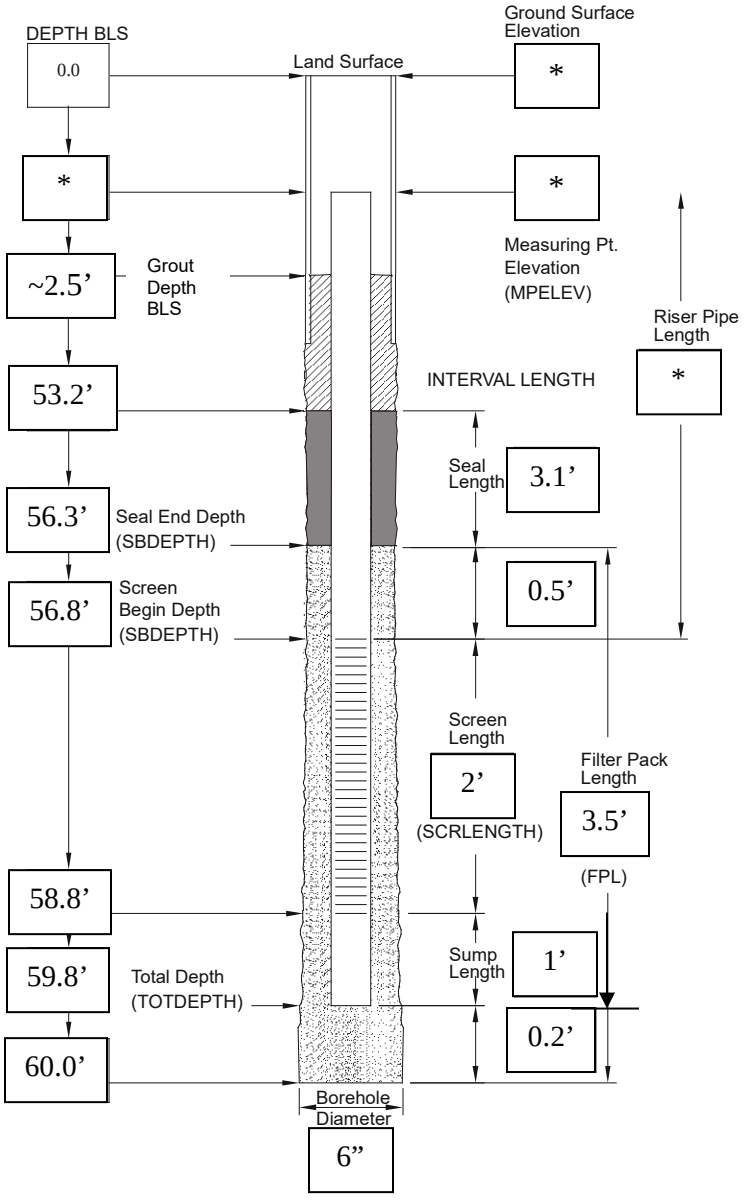
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW143
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/10/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/10/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW

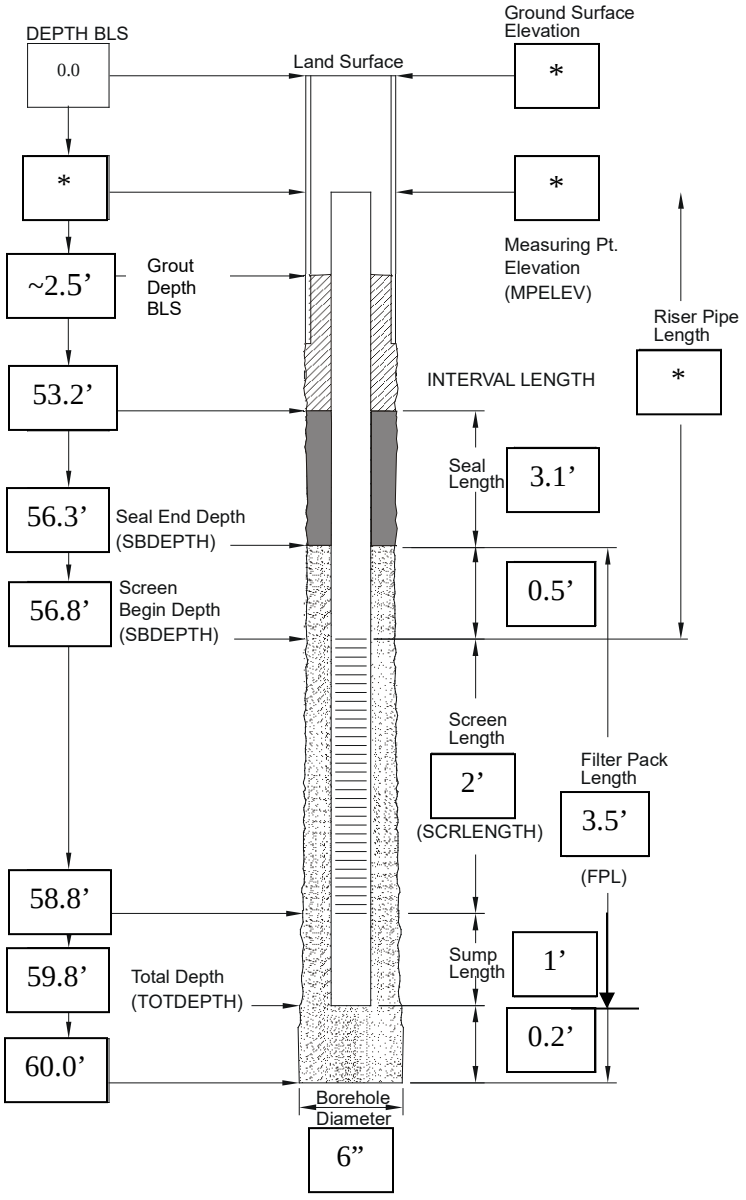
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW144
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW
Well screened ~57-59 ft BLS

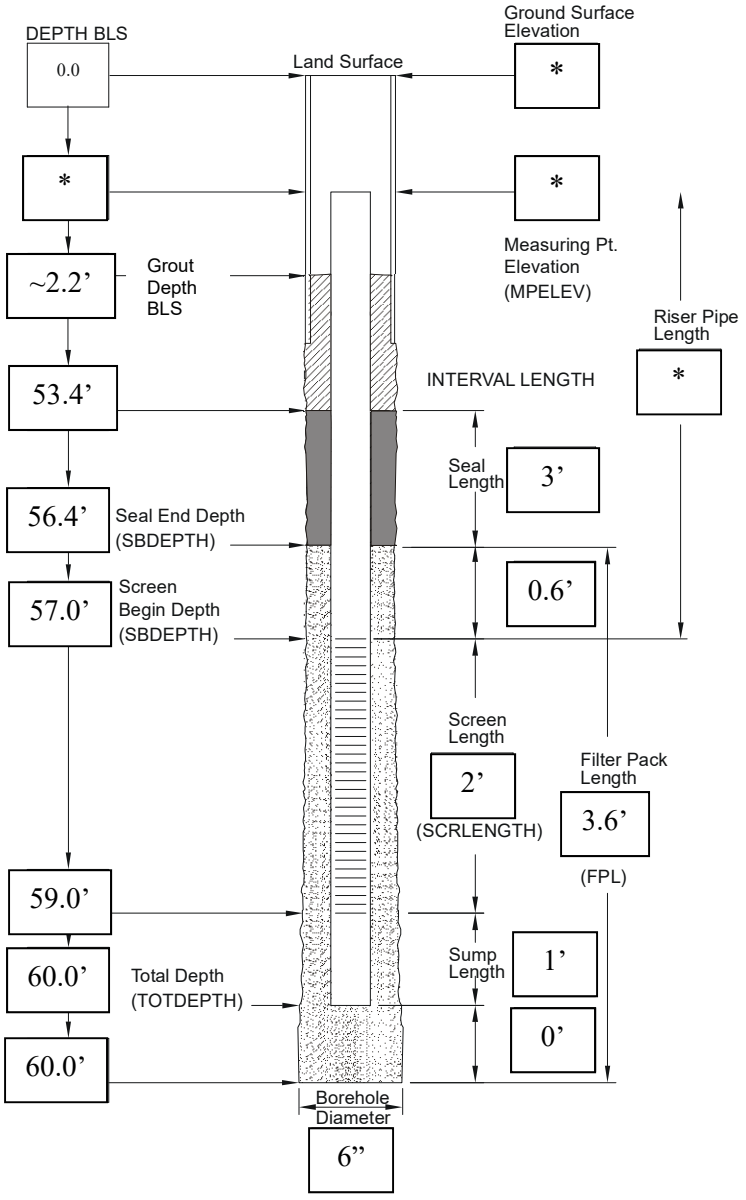
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW145
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/31/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

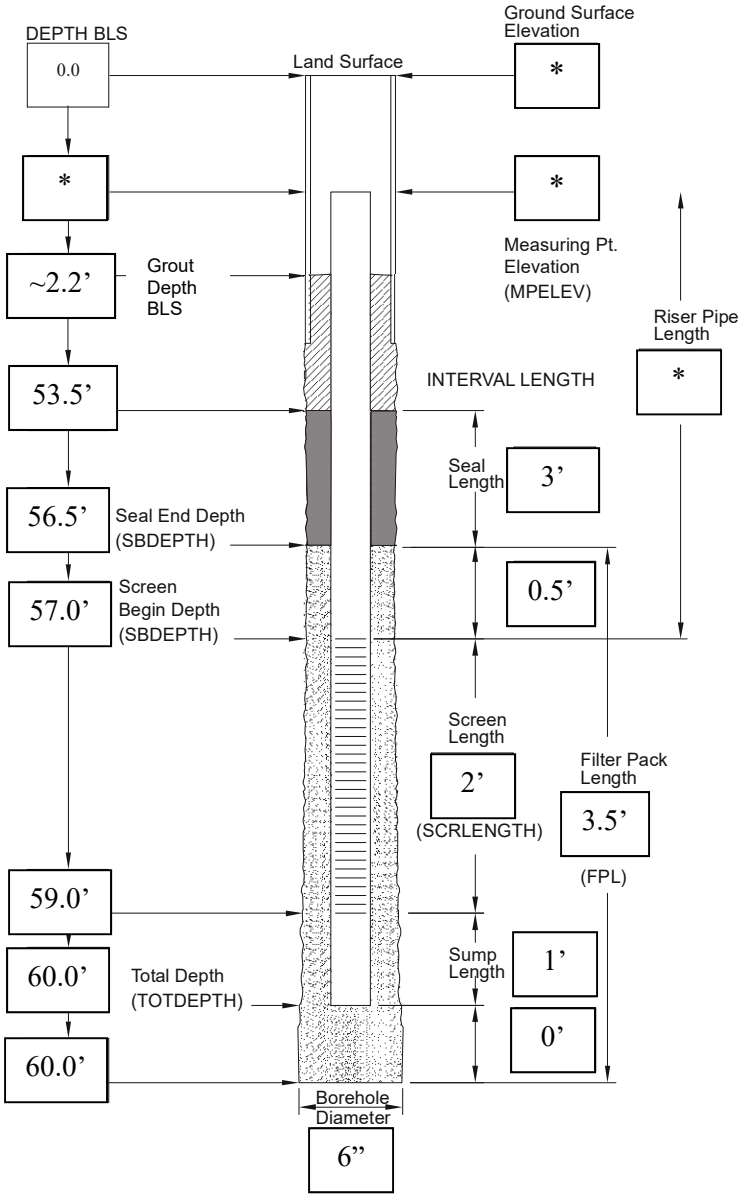
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW146
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/31/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

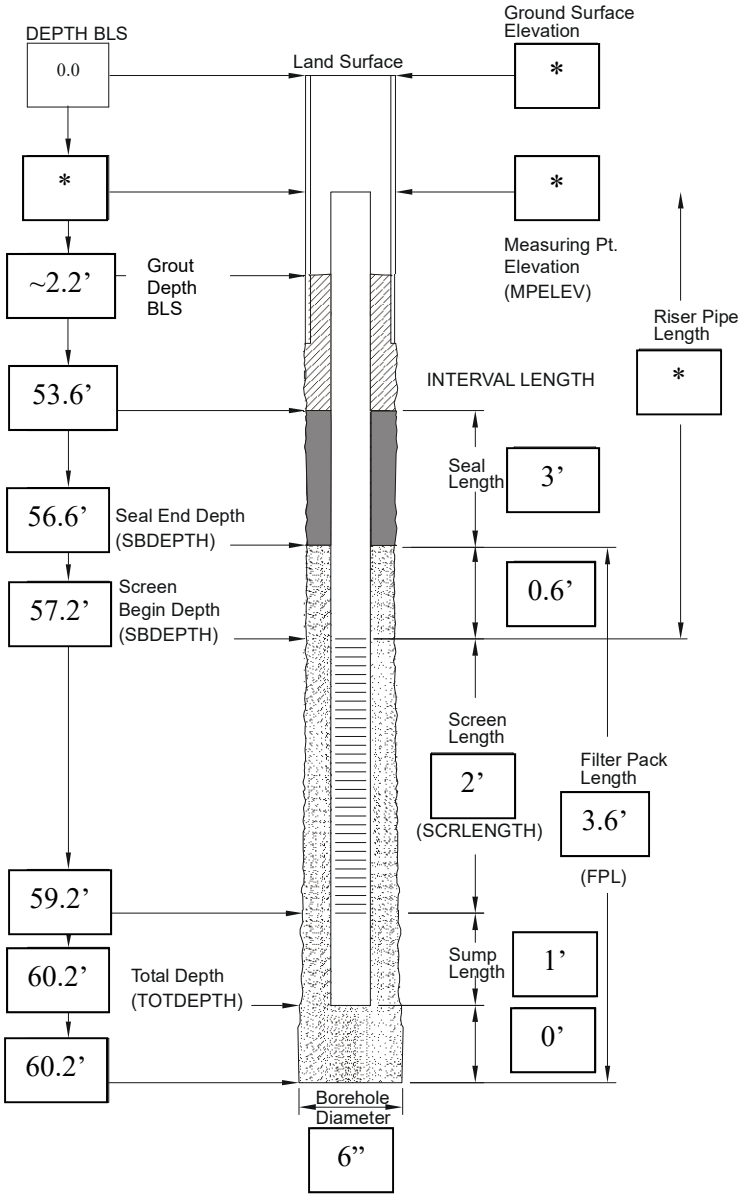
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW147
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/31/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/31/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

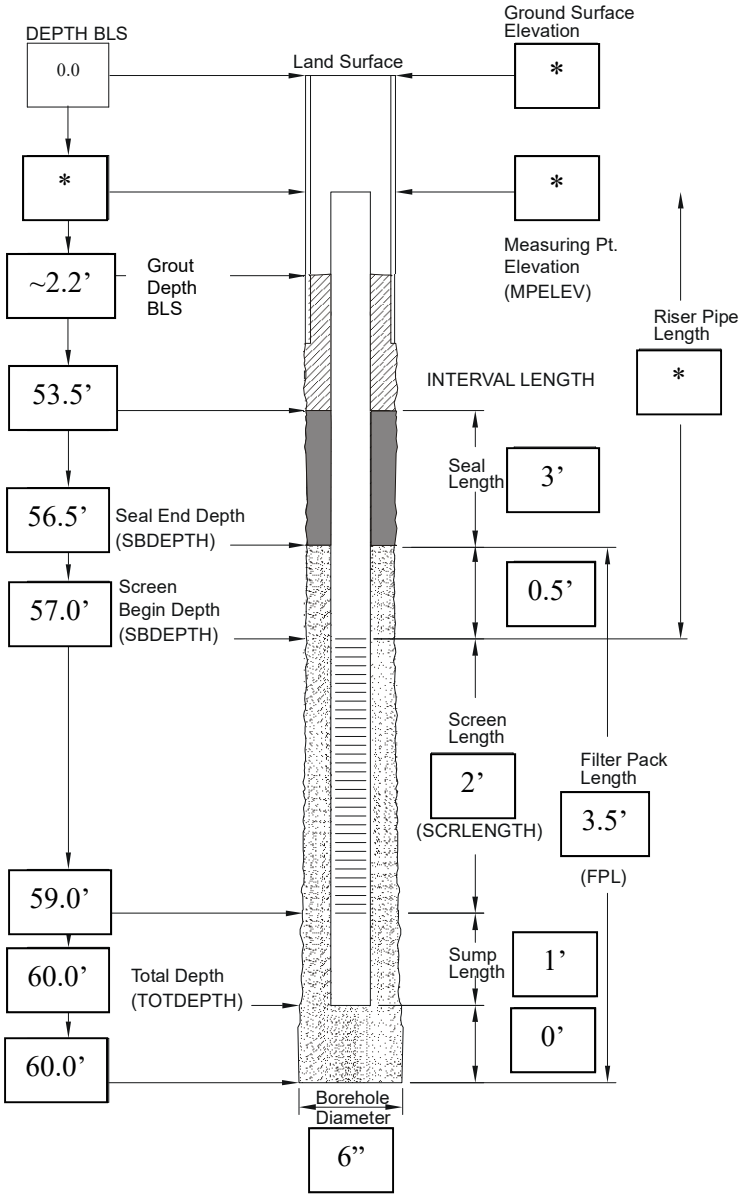
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW148
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/1/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/1/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

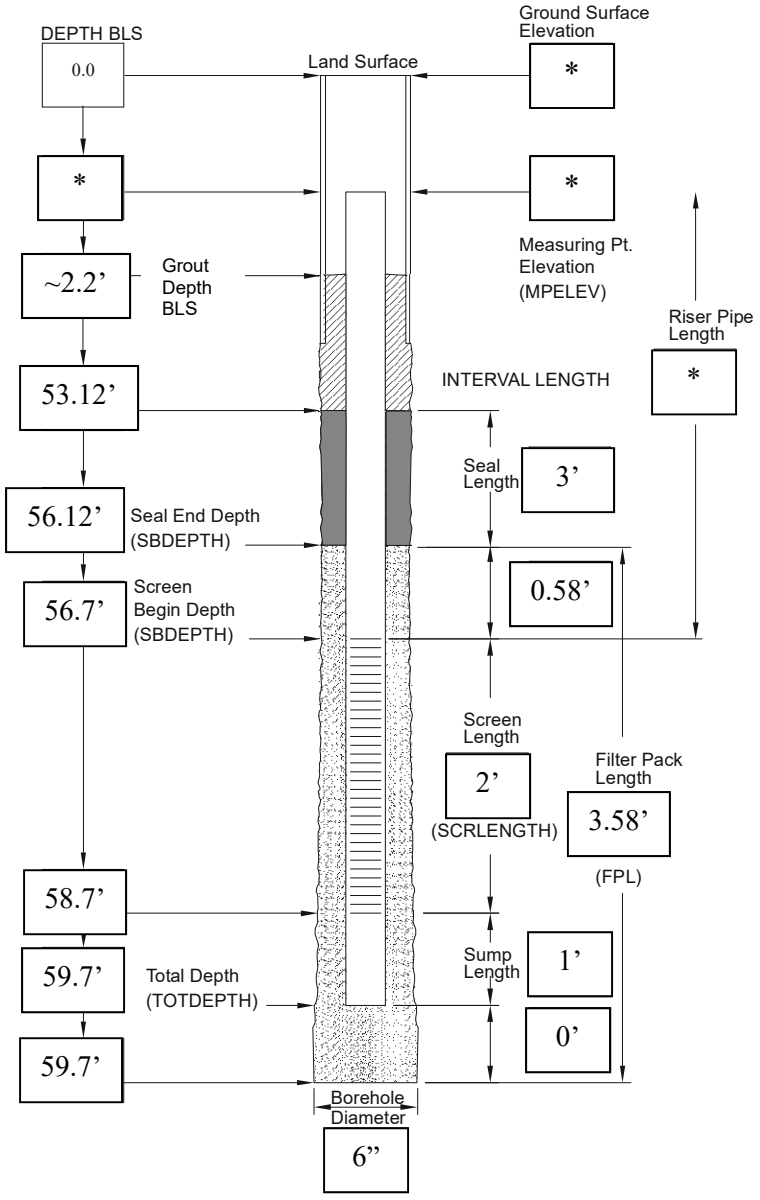
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW149
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/17/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

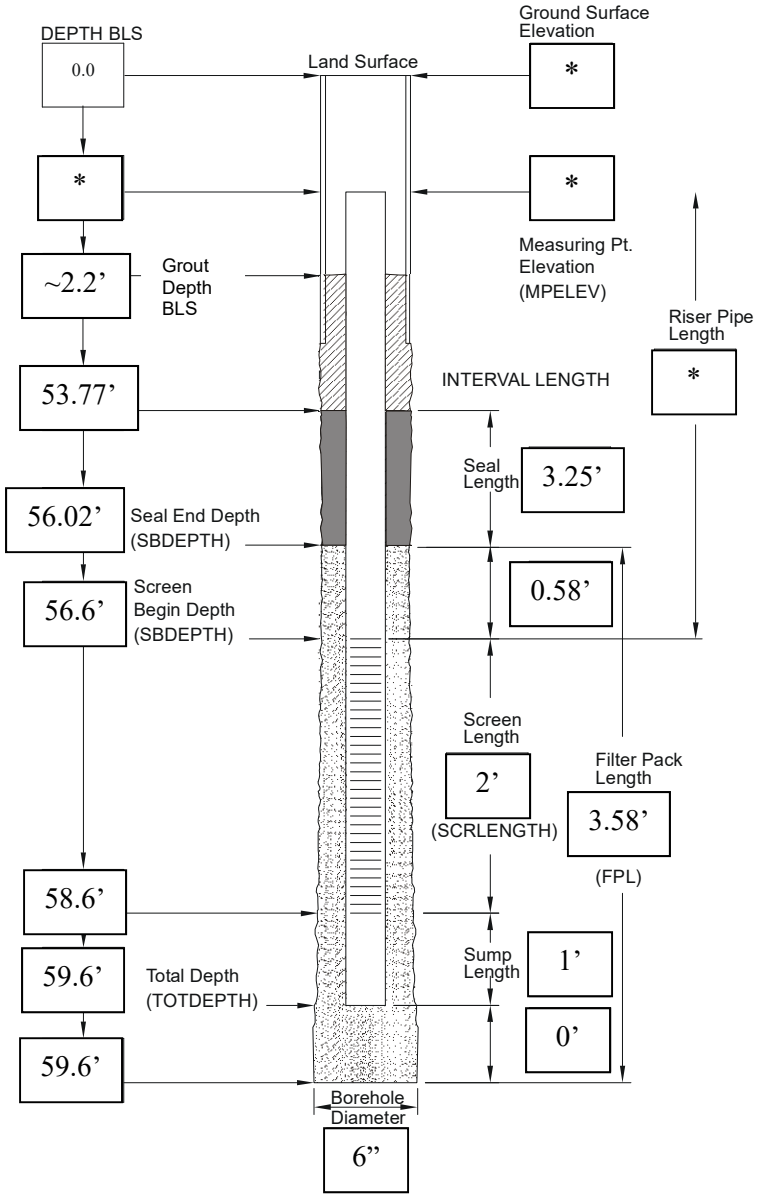
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW150
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave, Gamma
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
*Well to be completed by FECC and surveyed

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/16/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

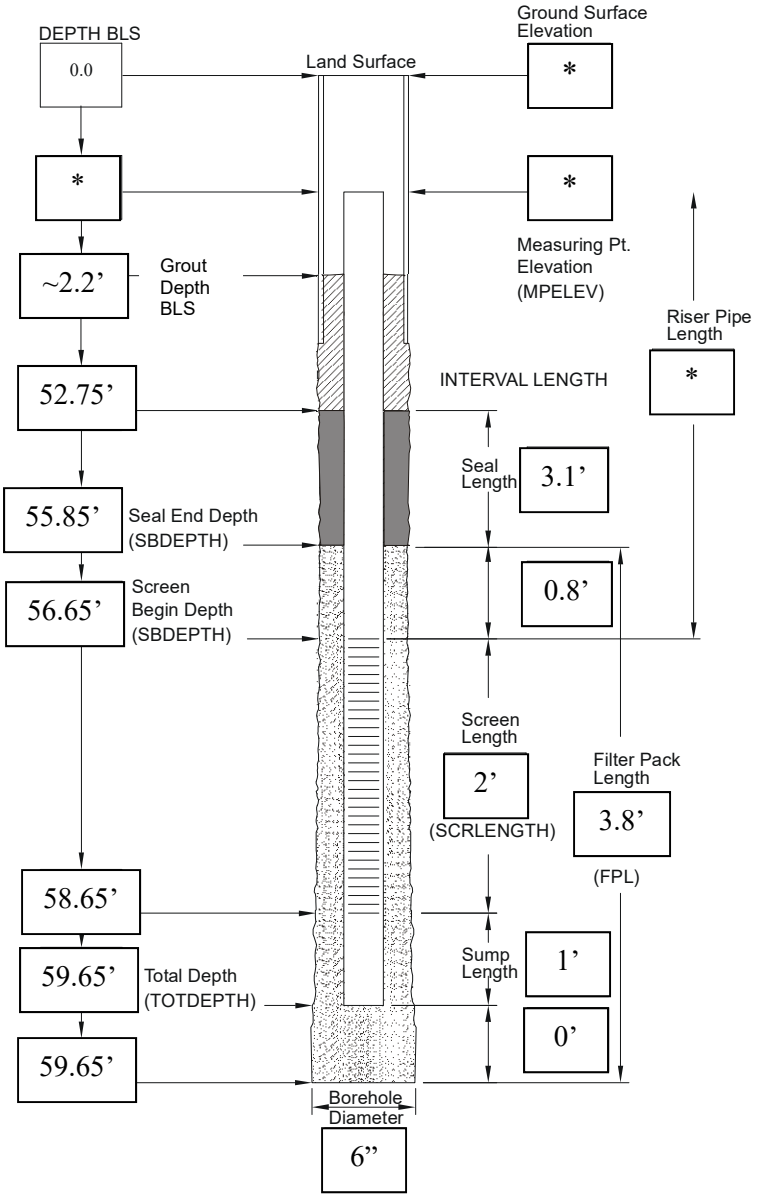
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW151
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/14/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

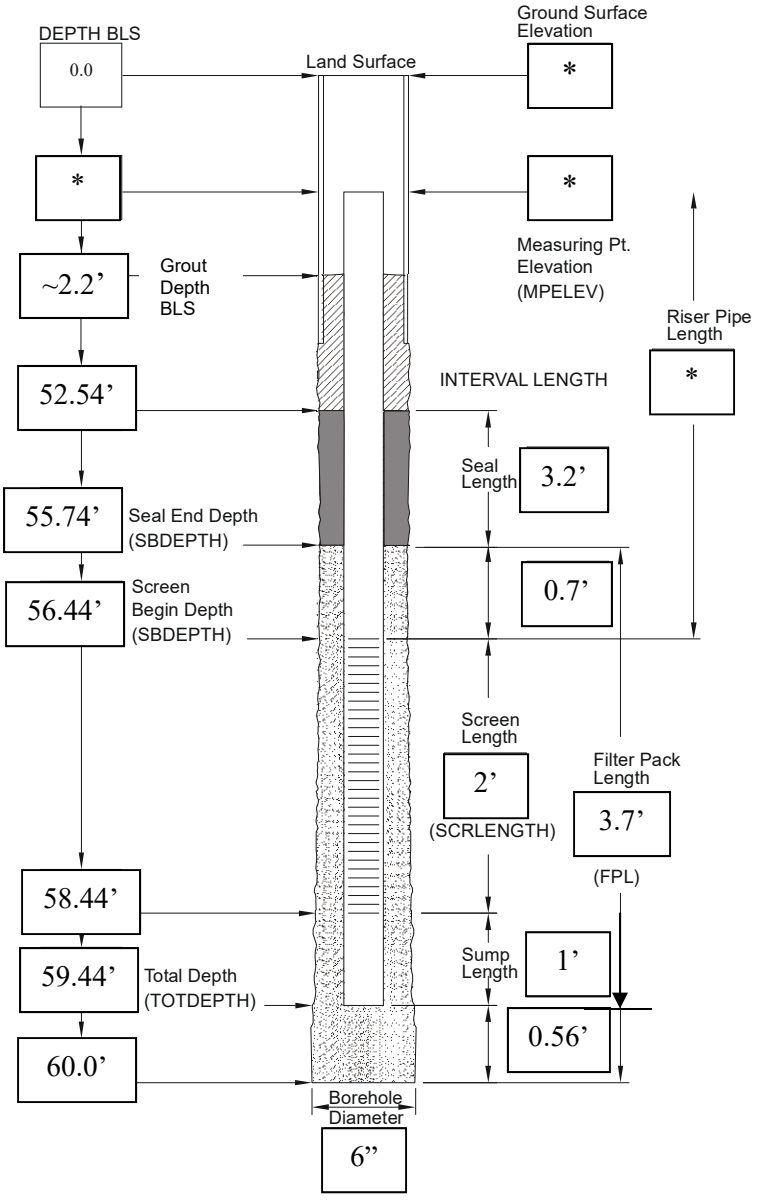
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW152
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/14/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: Sand and natural collapse
Placement Method: Natural collapse
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC
Adjusted screen interval to 56.5-58.5 due to thickness and cohesiveness of SP-SC layer at 58-59' BLS

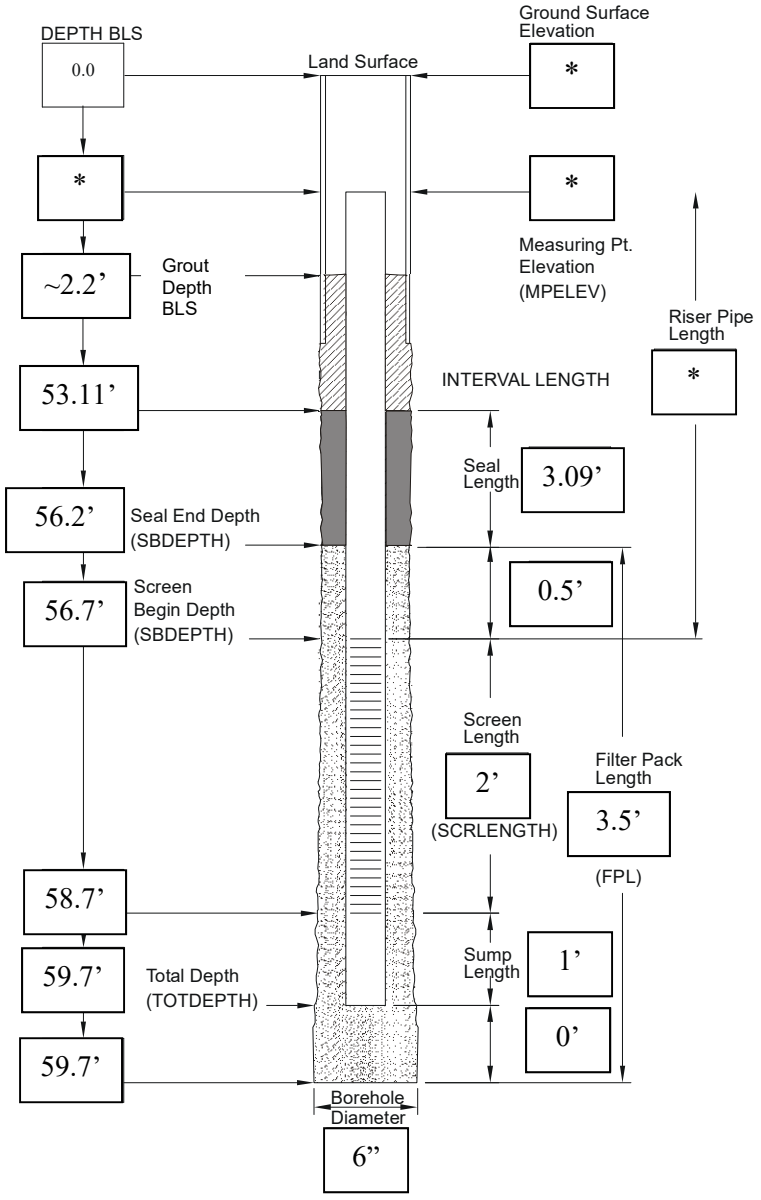
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW153
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave, Gamma
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/16/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

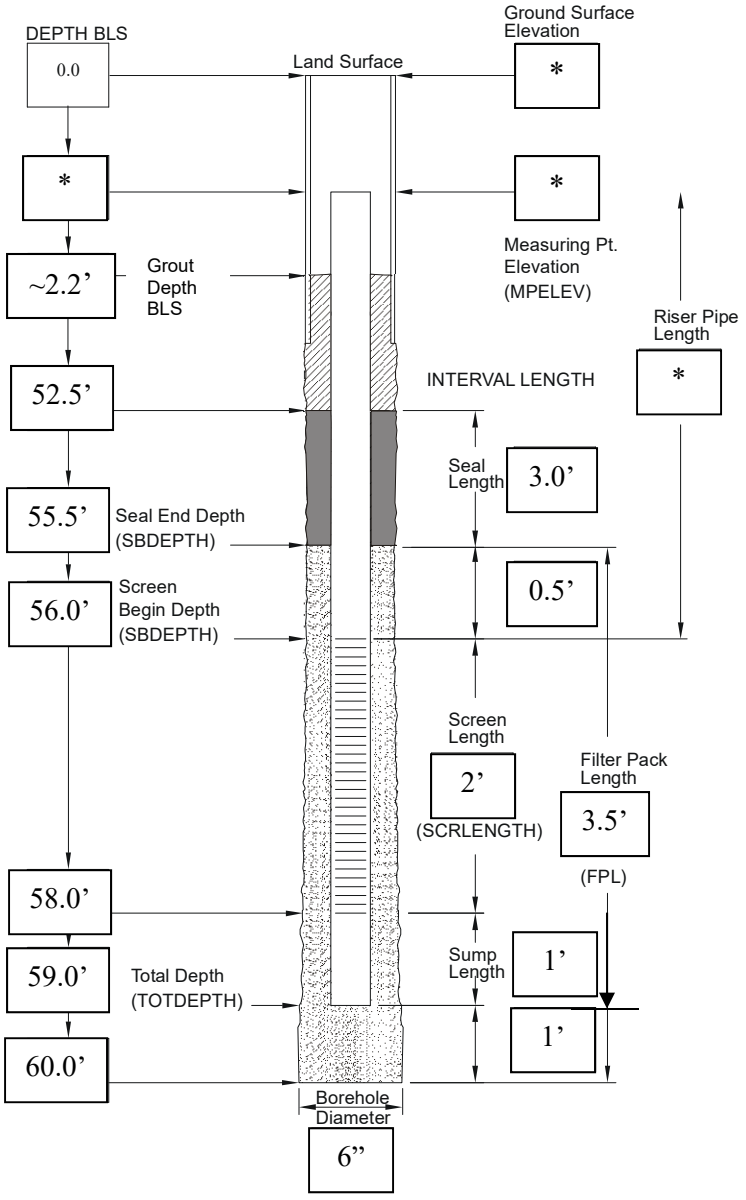
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW154
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave, Gamma
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/16/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 silica sand and borehole collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

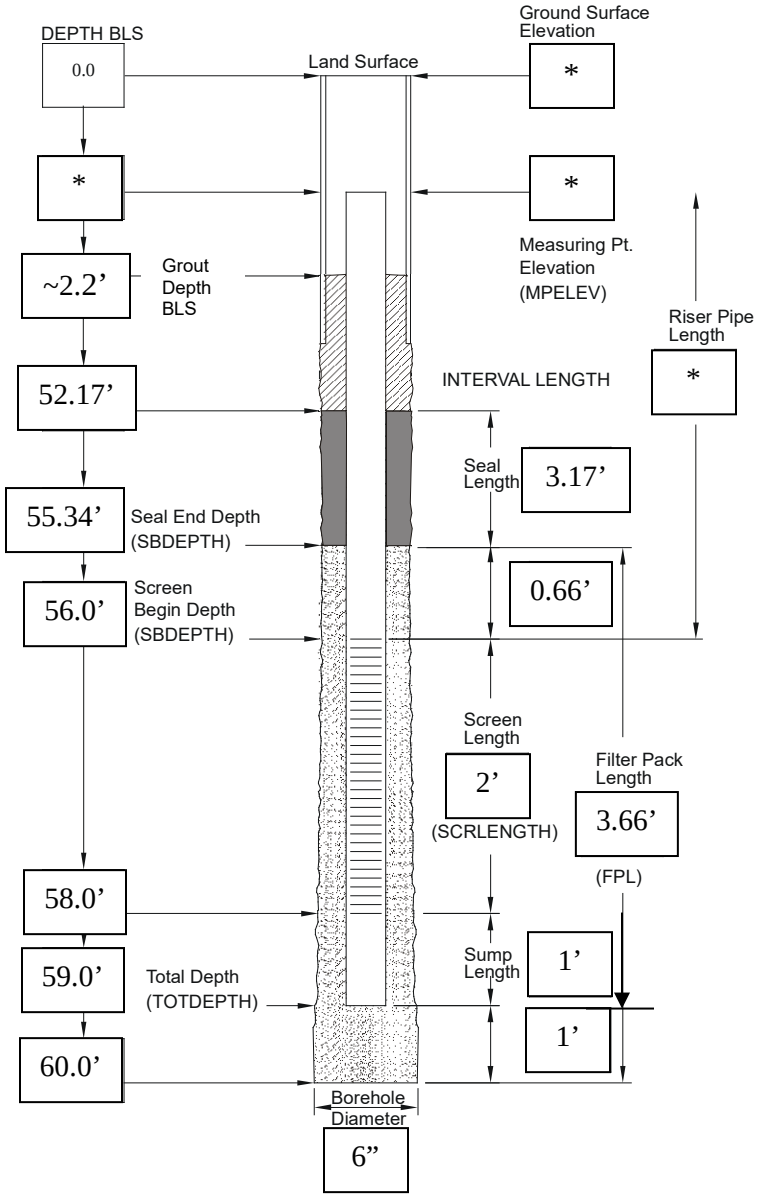
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW155
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/17/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/17/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and borehole collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

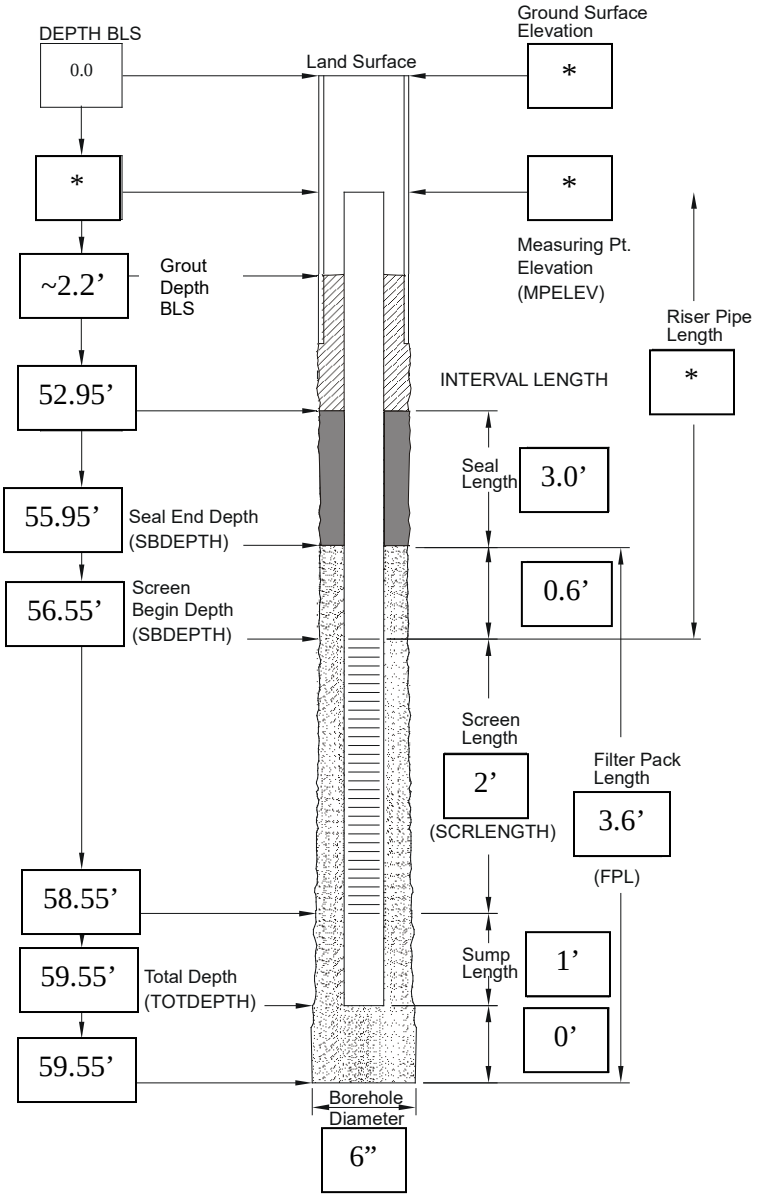
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW156
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/13/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/13/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW

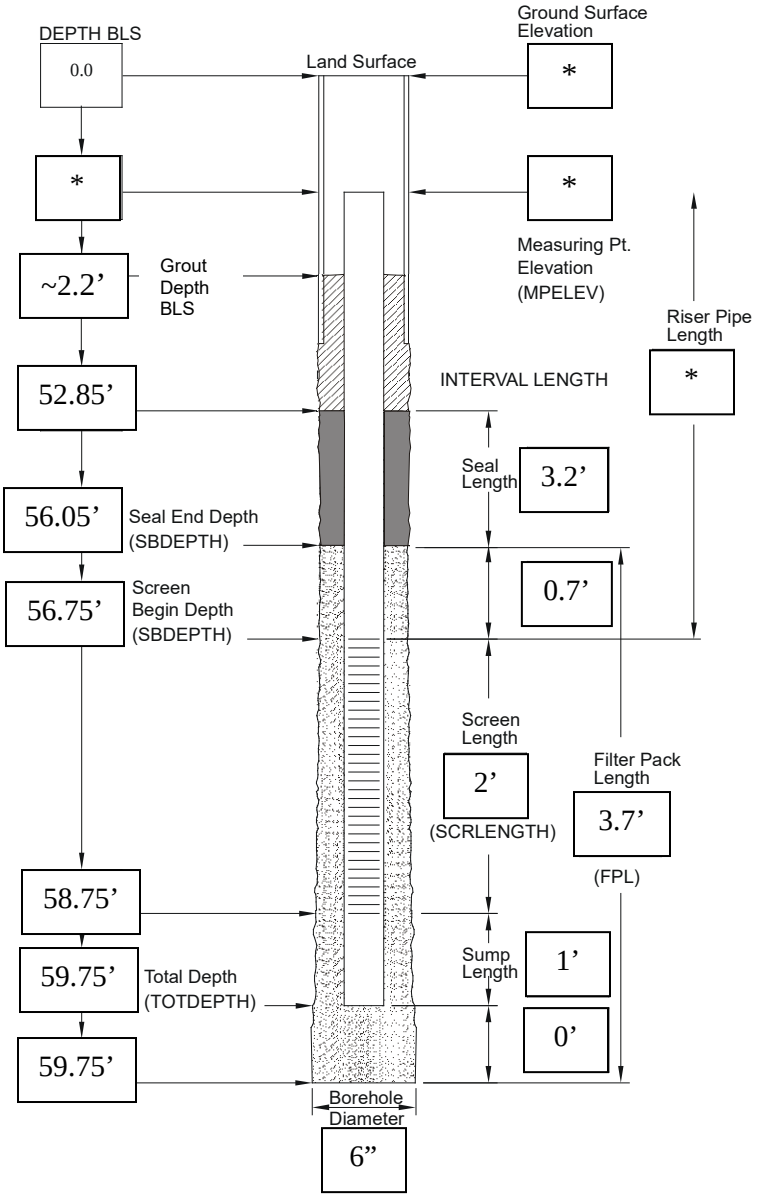
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW157
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/13/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/13/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW

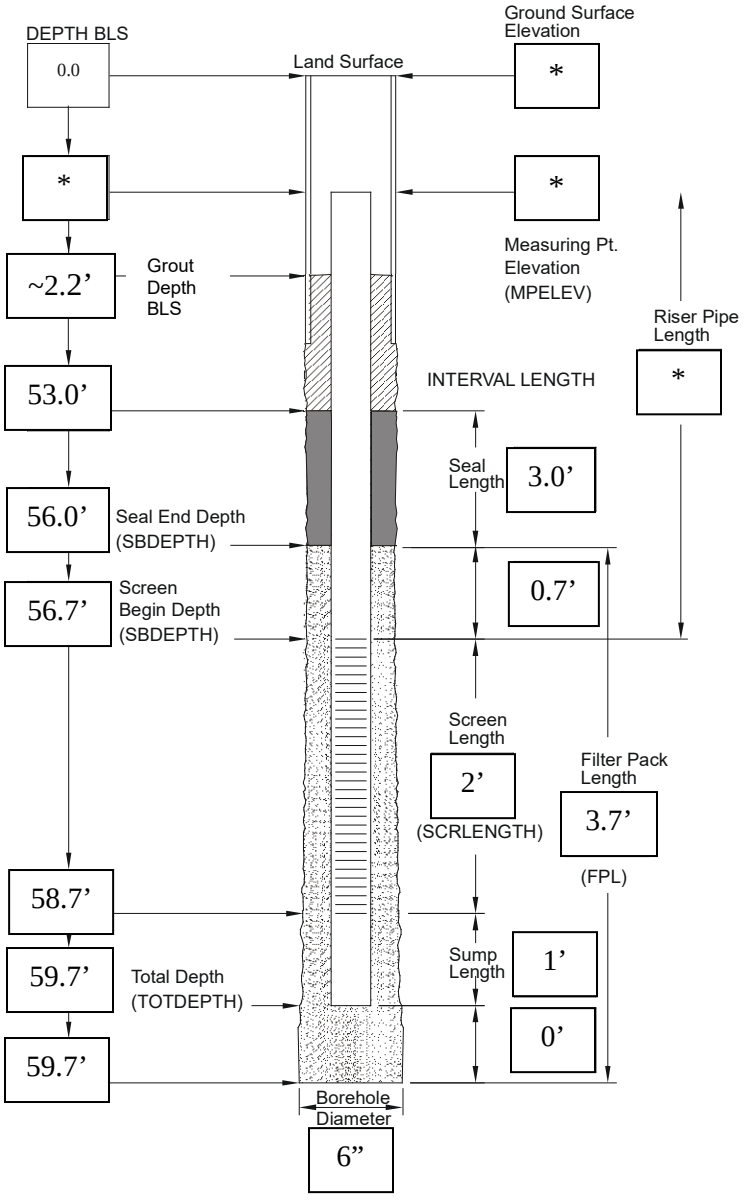
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW158
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/14/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

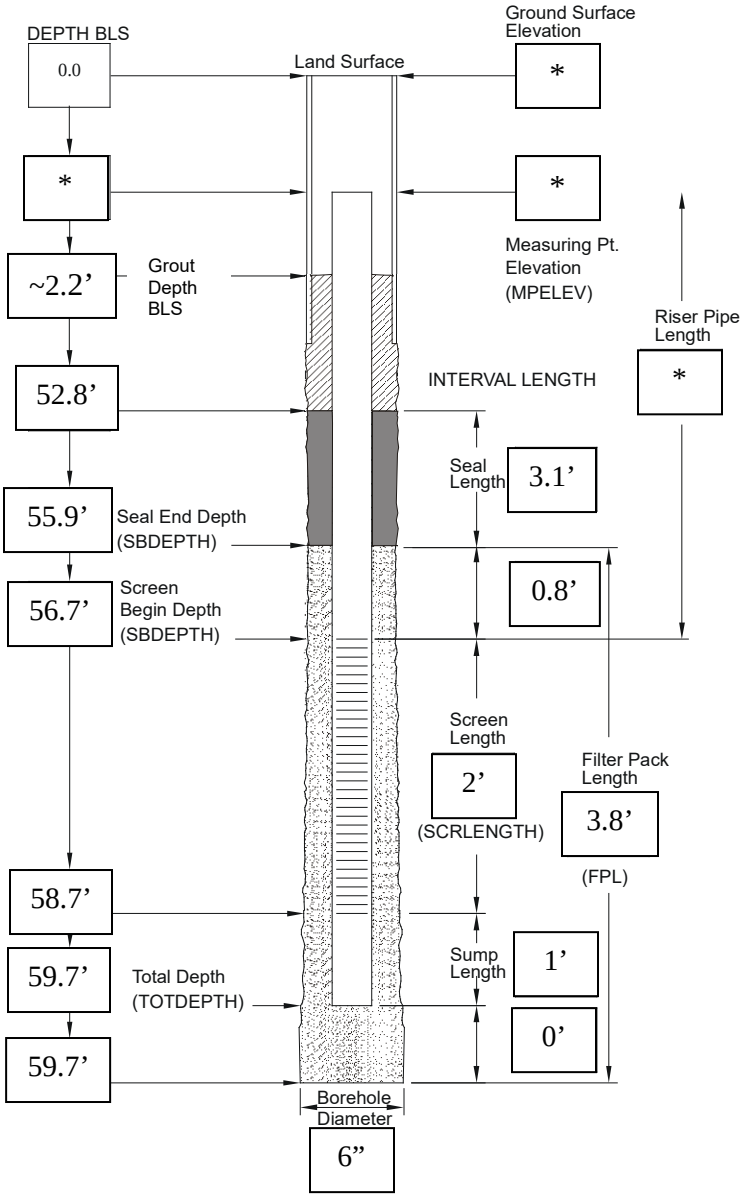
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW159
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*To be completed by FECC

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/14/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

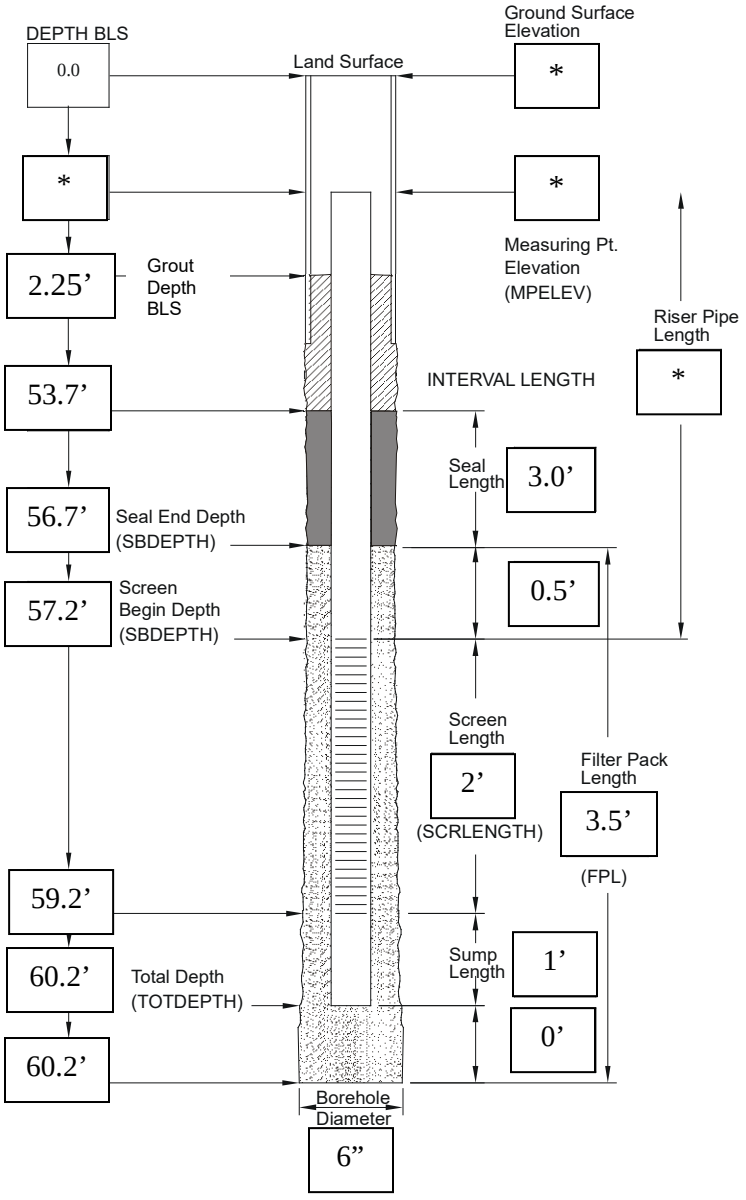
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW160
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/9/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

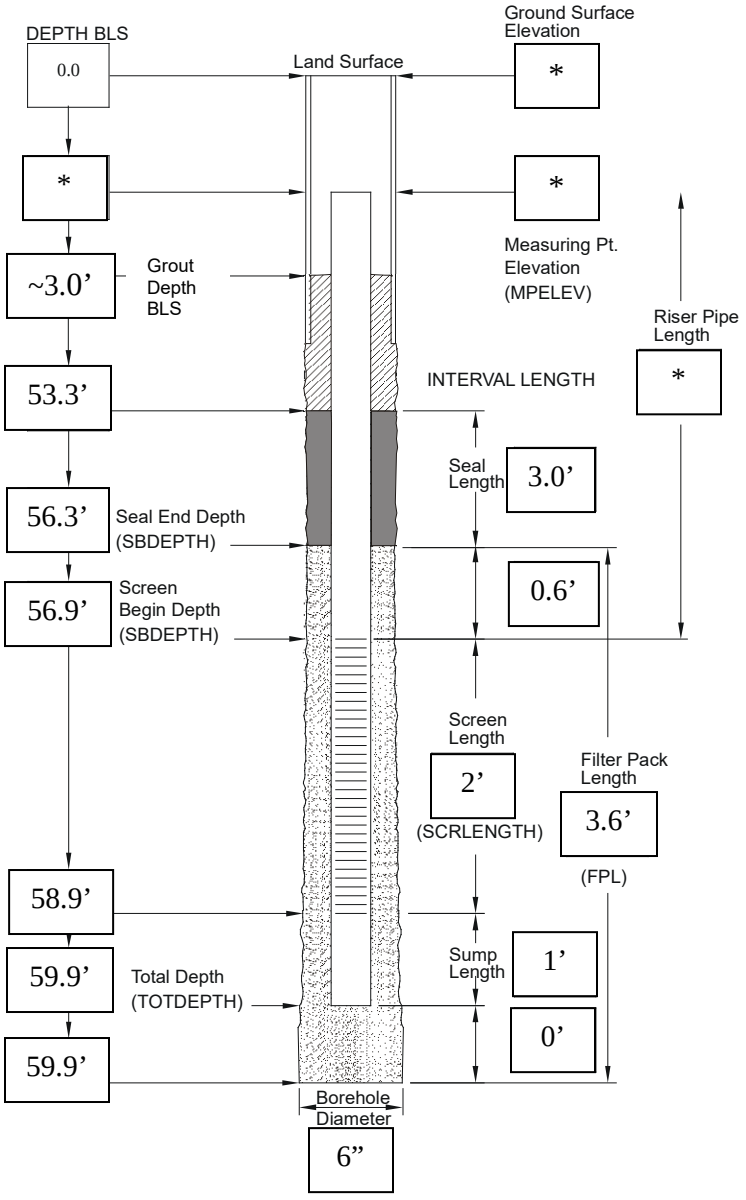
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW161
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/9/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

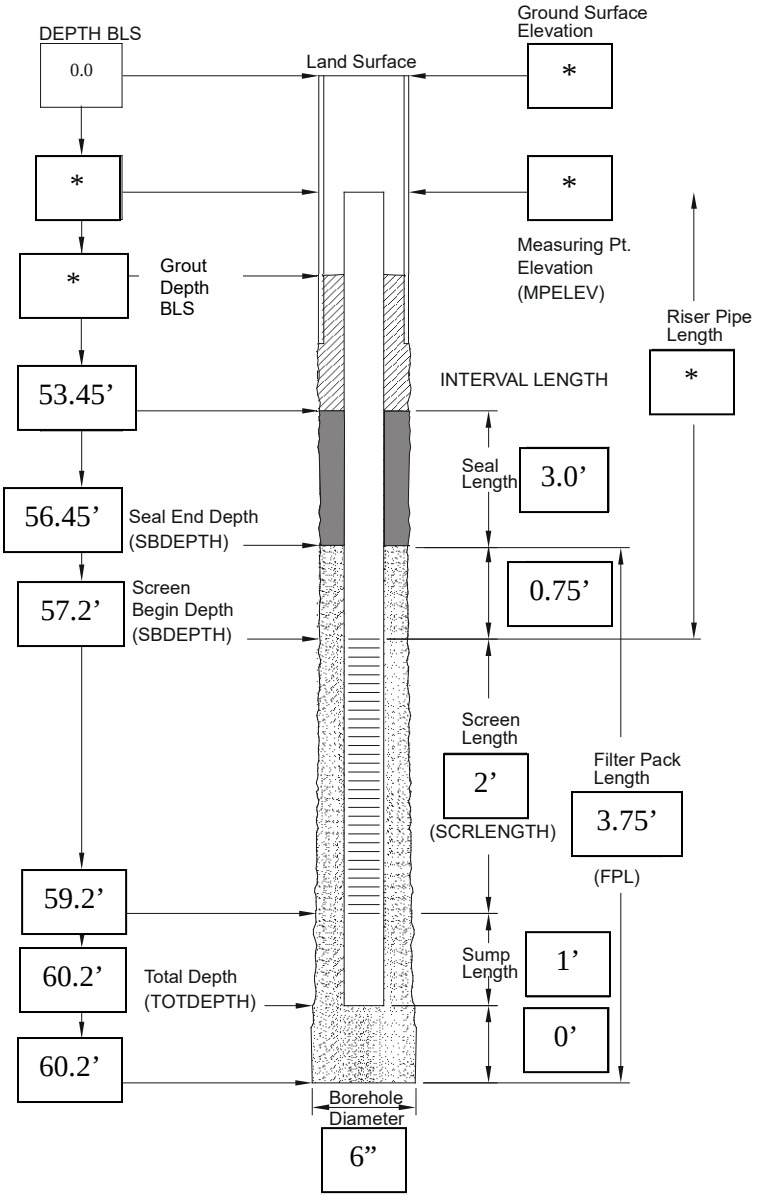
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW162
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/10/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/10/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

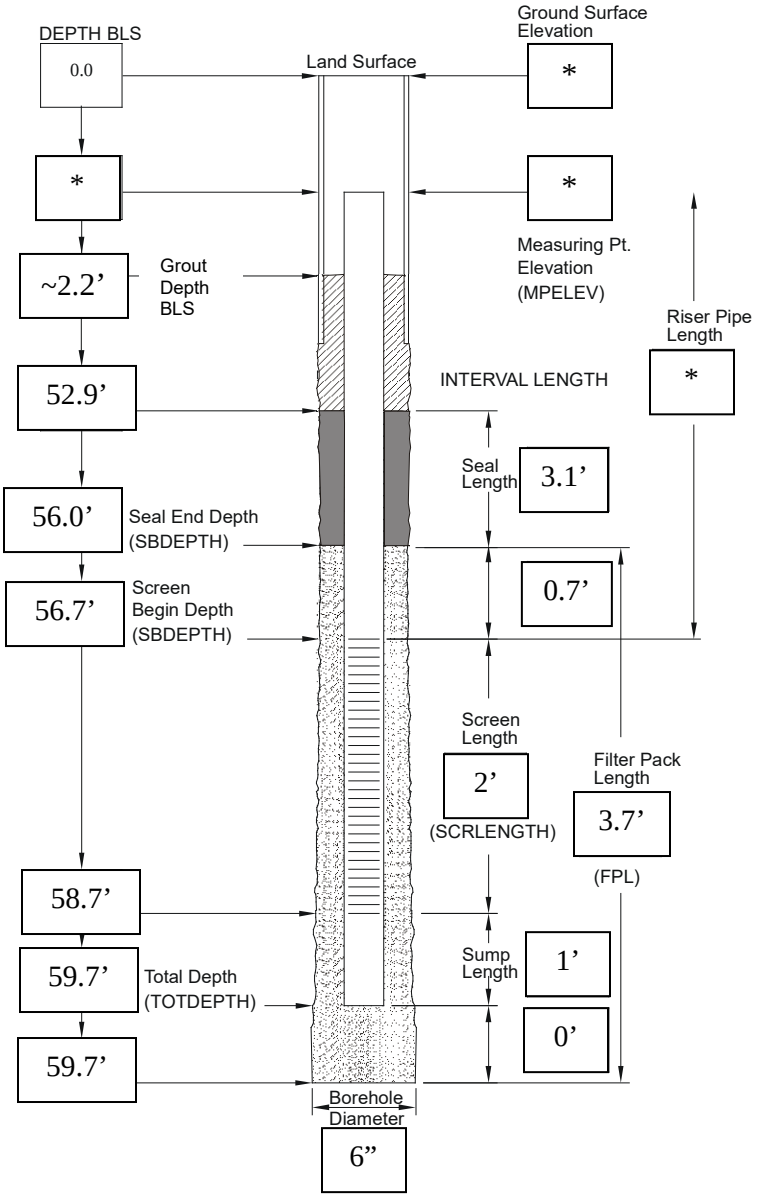
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW163
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/13/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/13/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

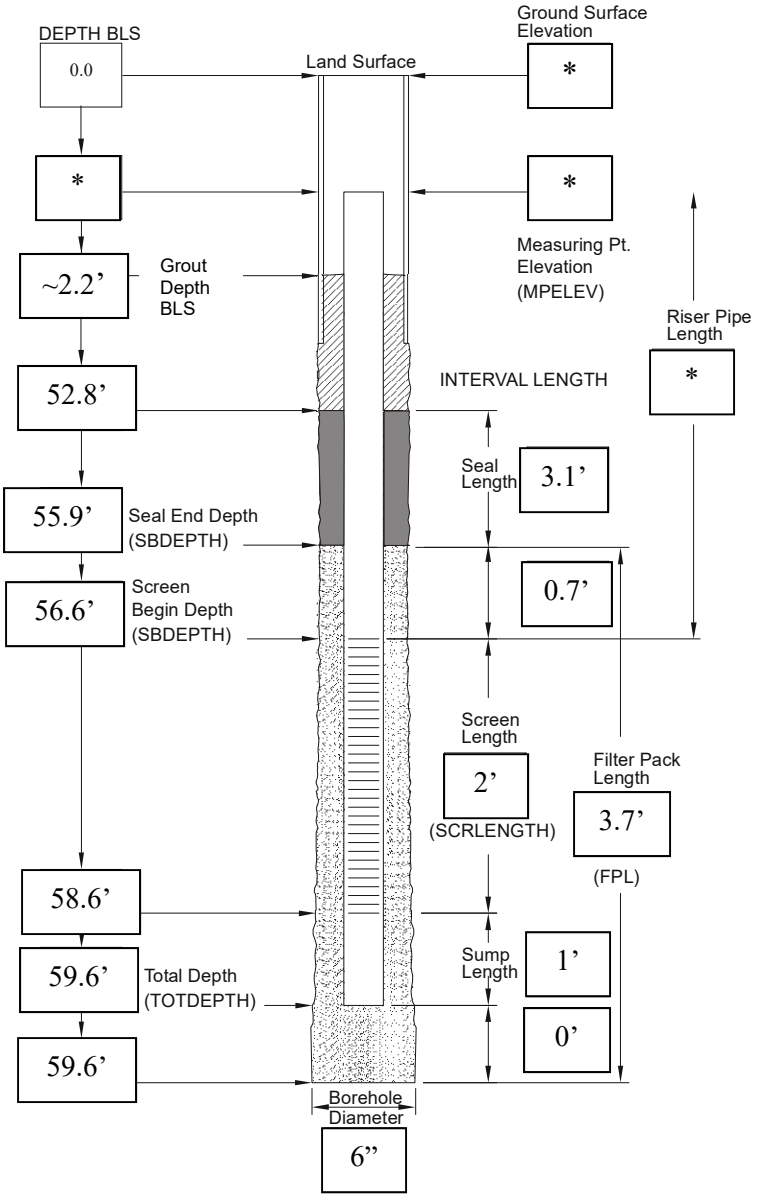
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW164
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/14/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

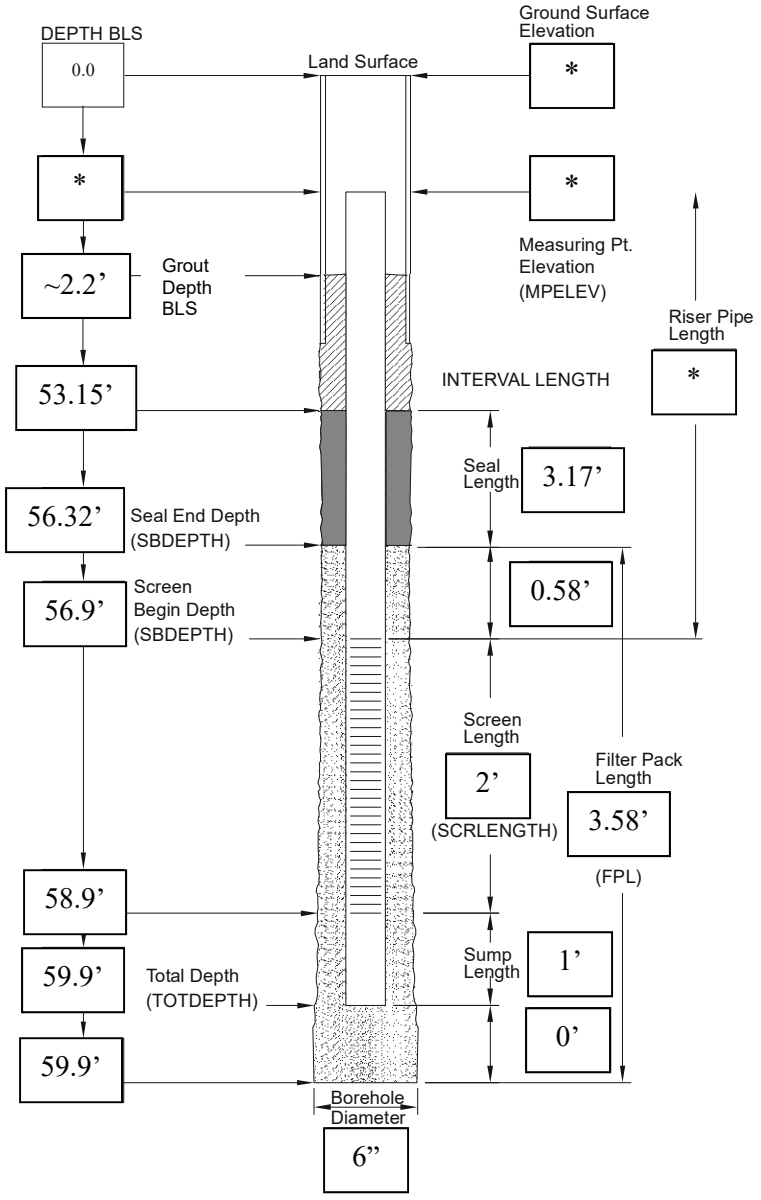
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW165
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave, Gamma
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
*Well to be completed by FECC and surveyed

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/16/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

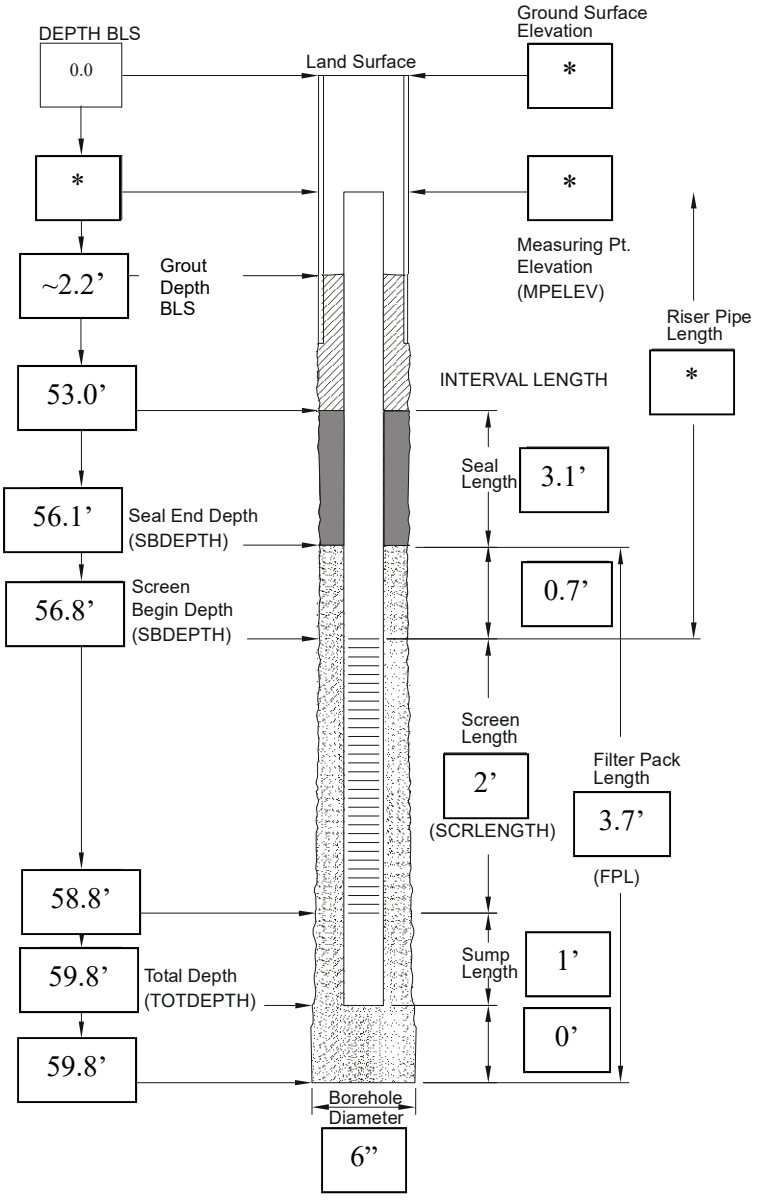
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW166
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/15/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

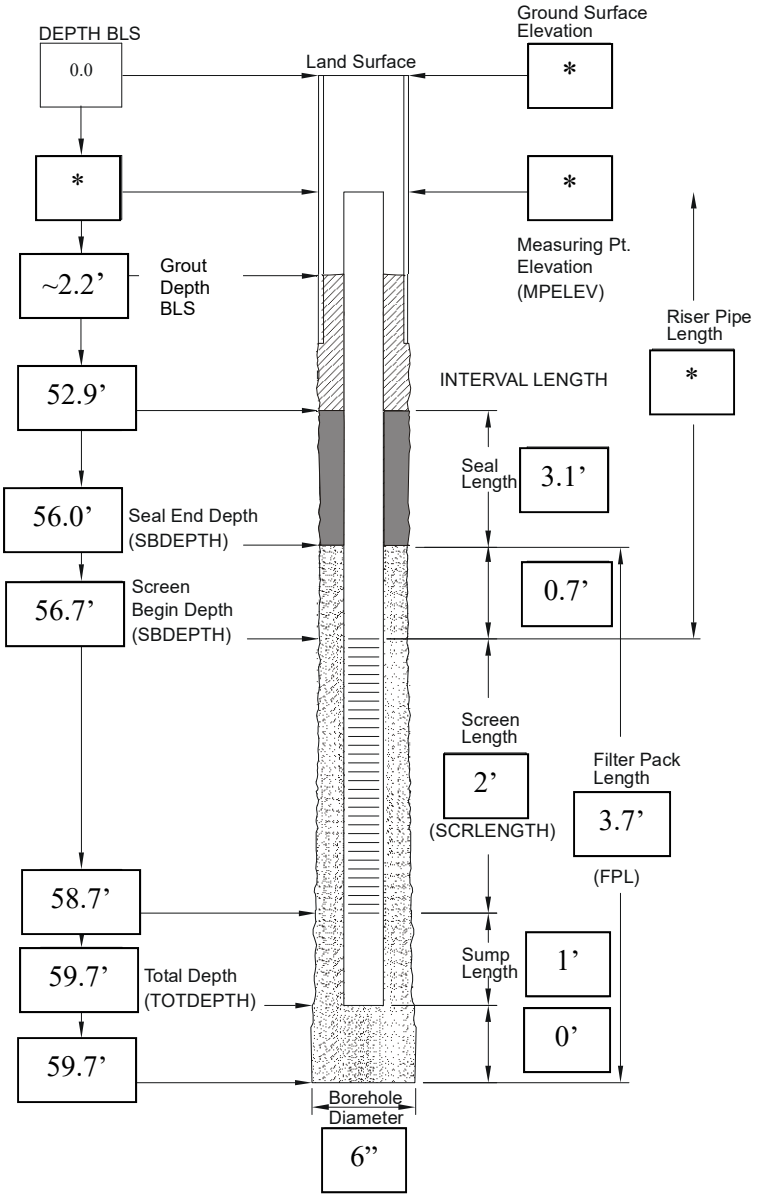
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW167
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/15/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

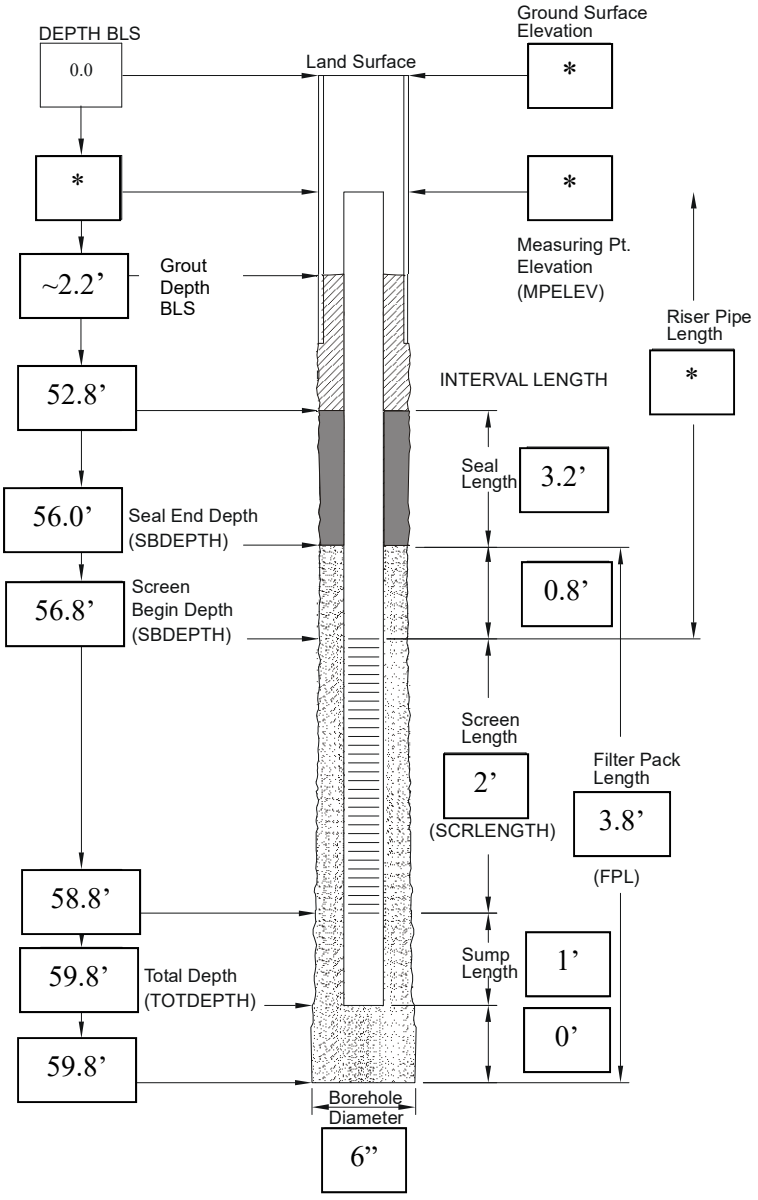
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW168
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/15/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

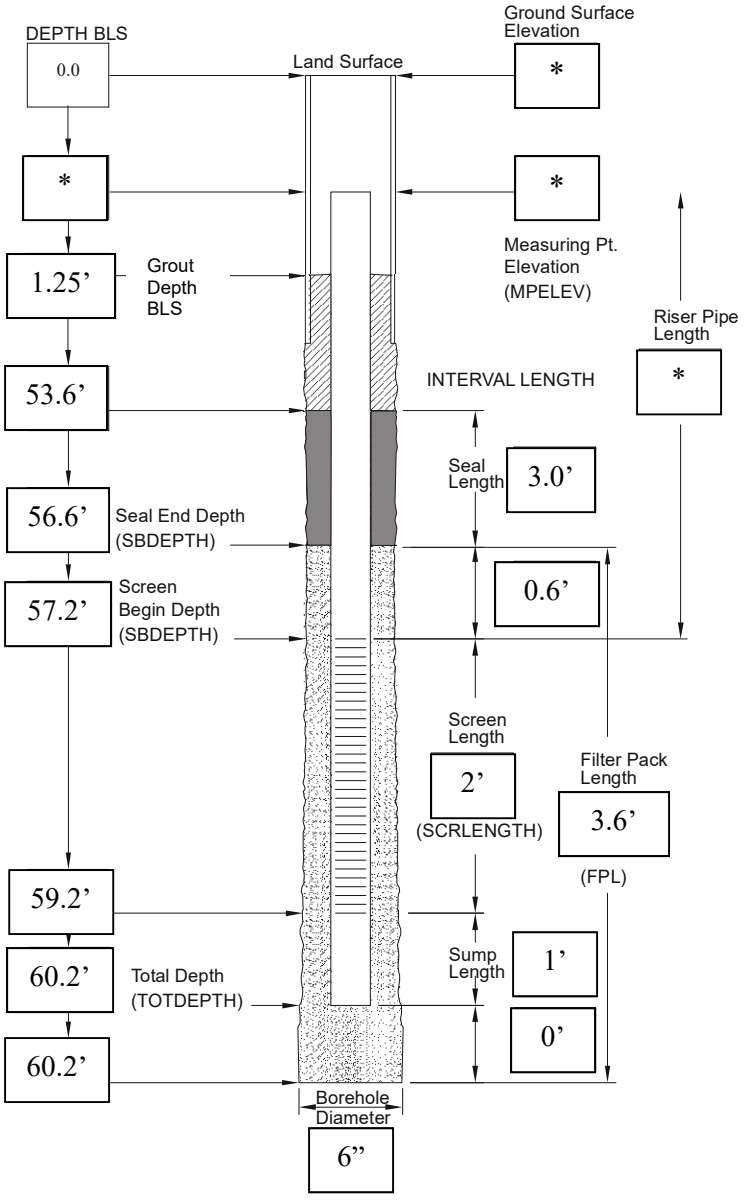
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW169
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/7/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

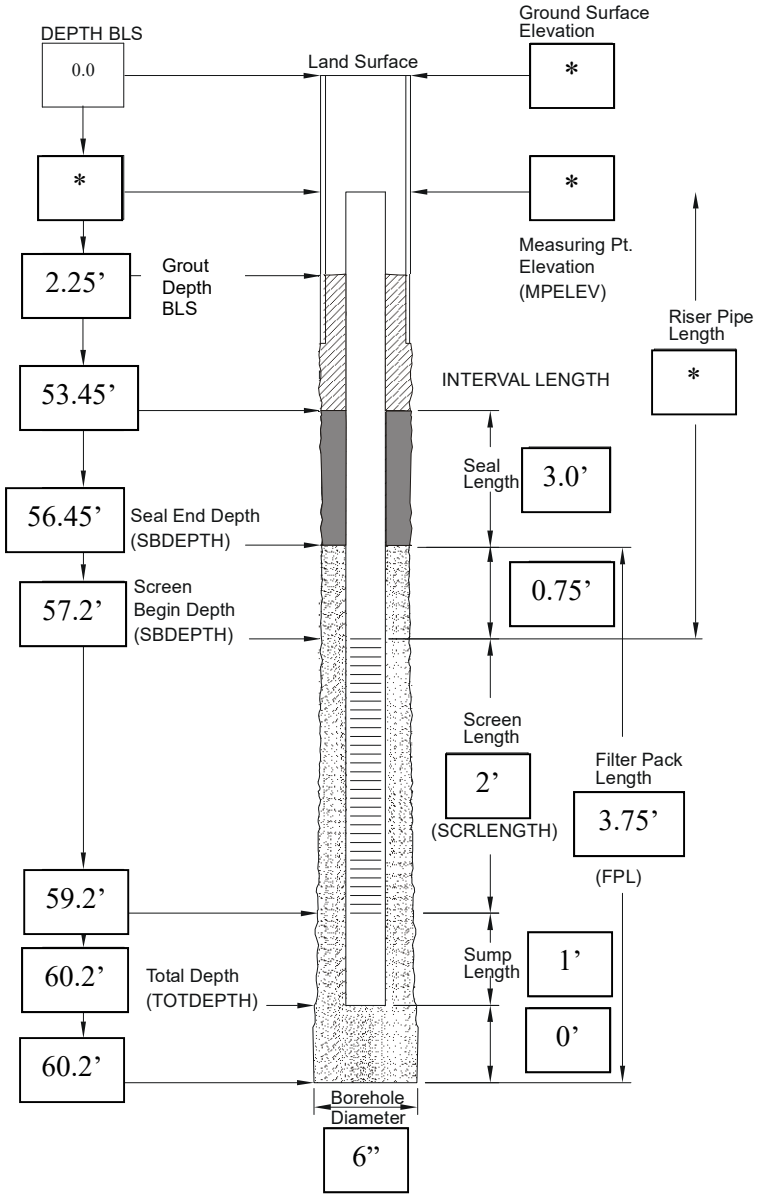
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW170
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/7/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

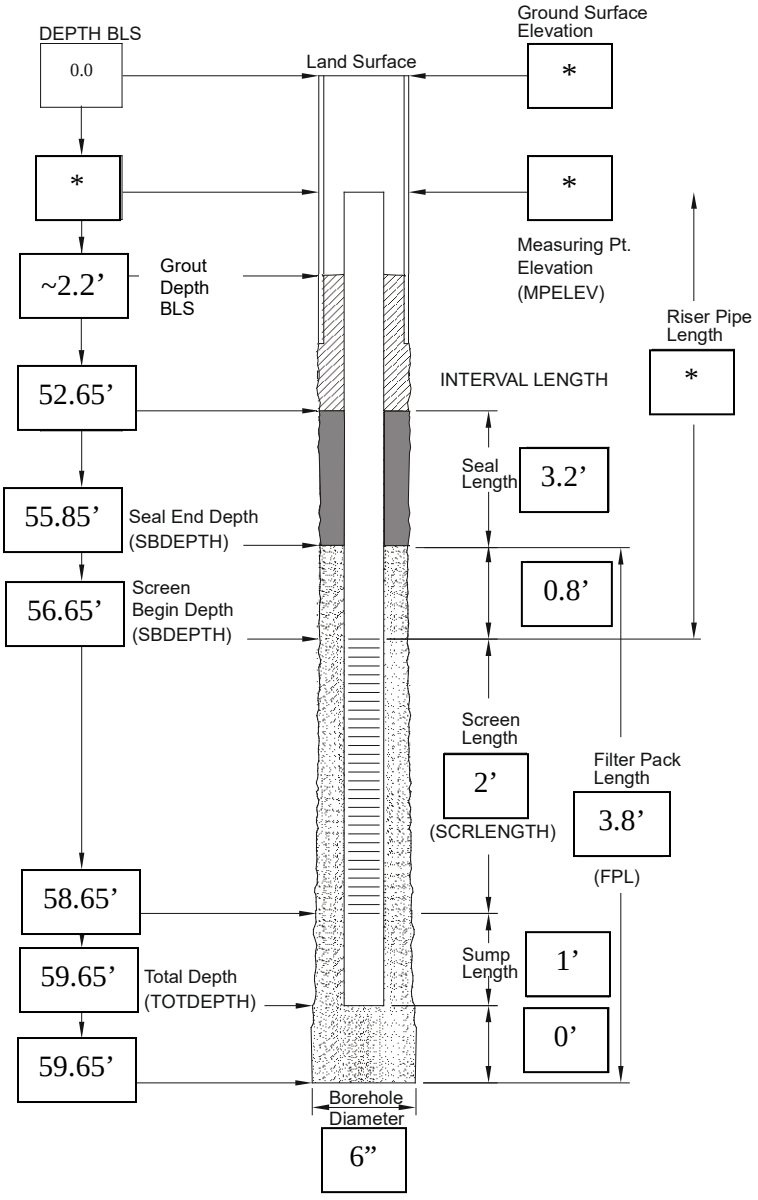
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW171
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/14/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

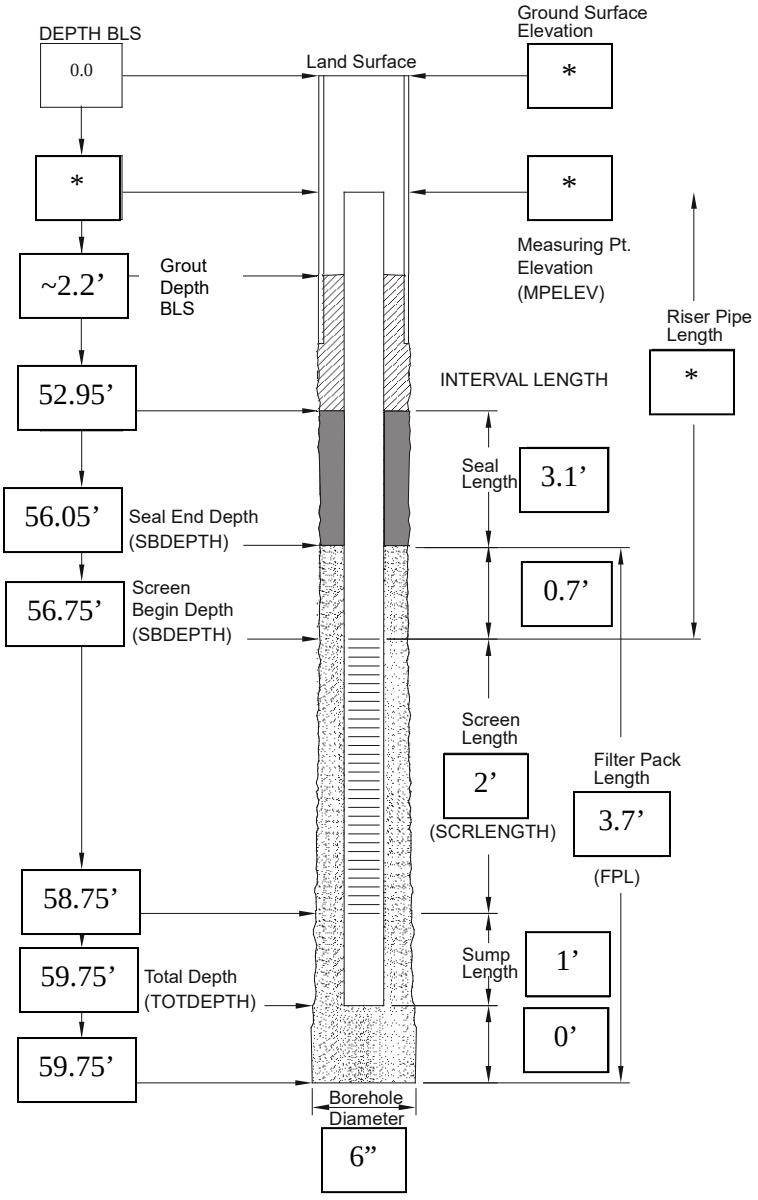
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW172
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/15/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

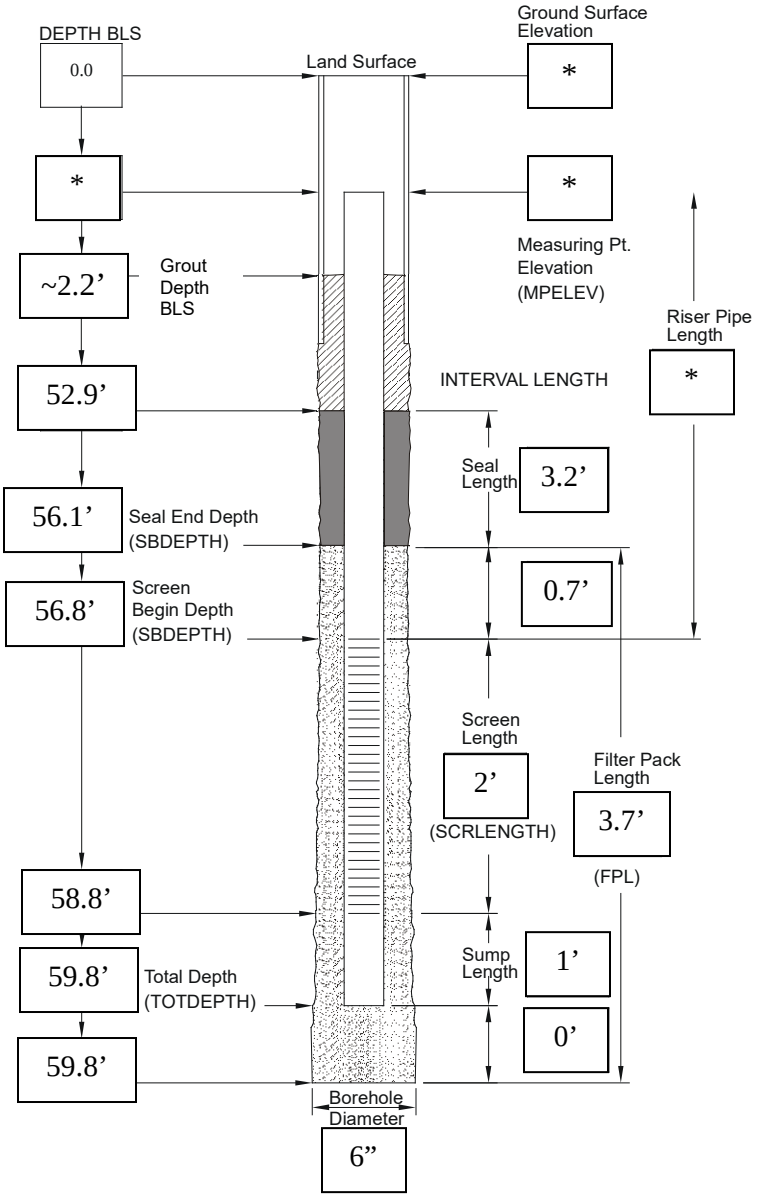
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW173
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/15/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

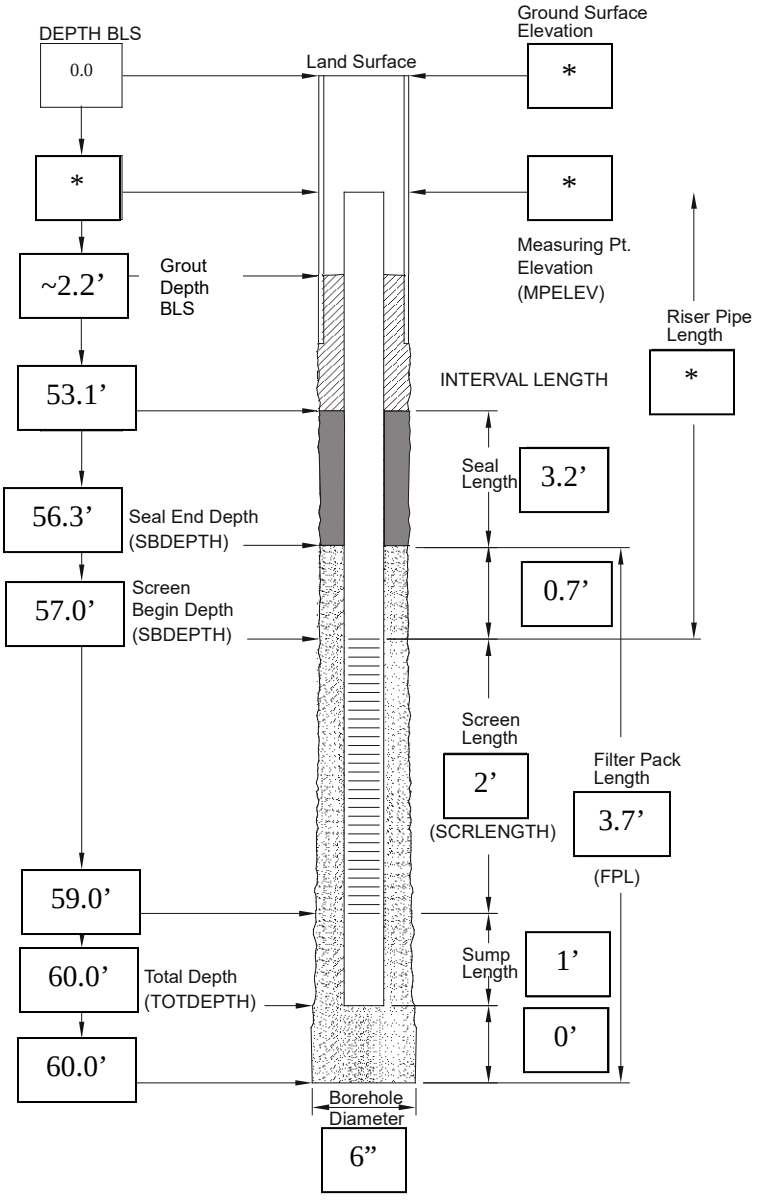
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW174
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/15/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

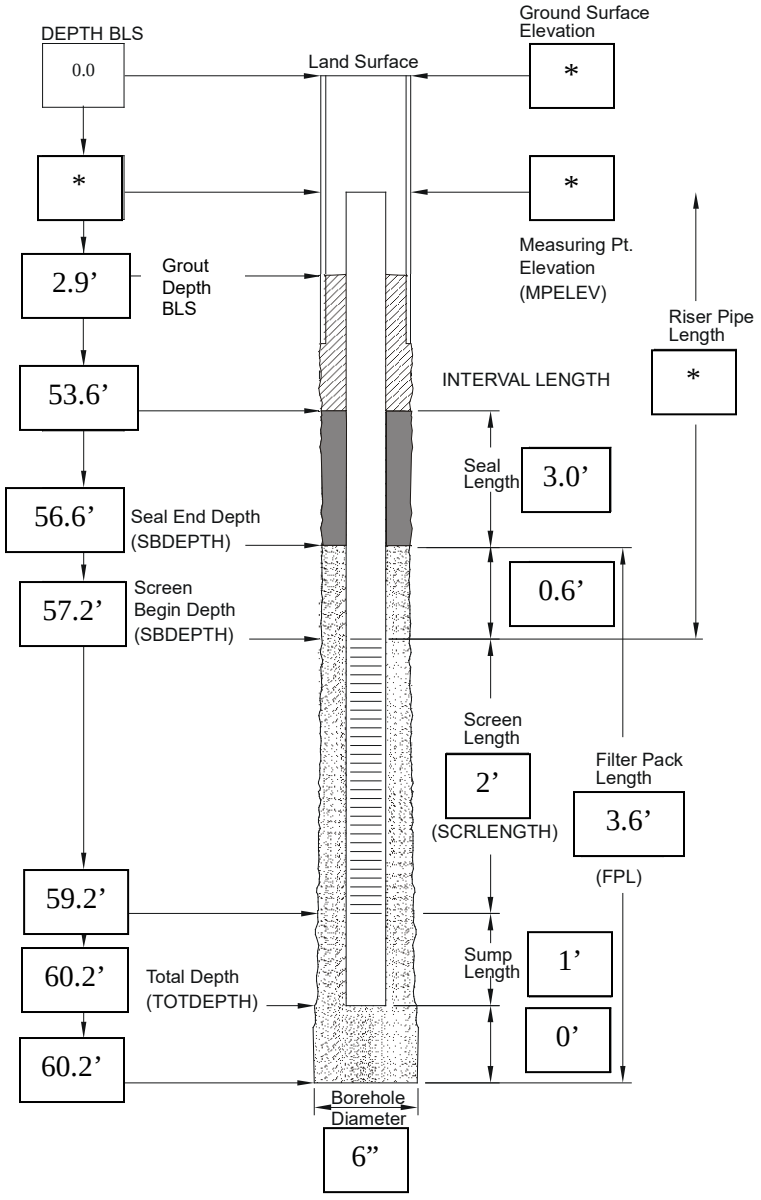
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW175
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

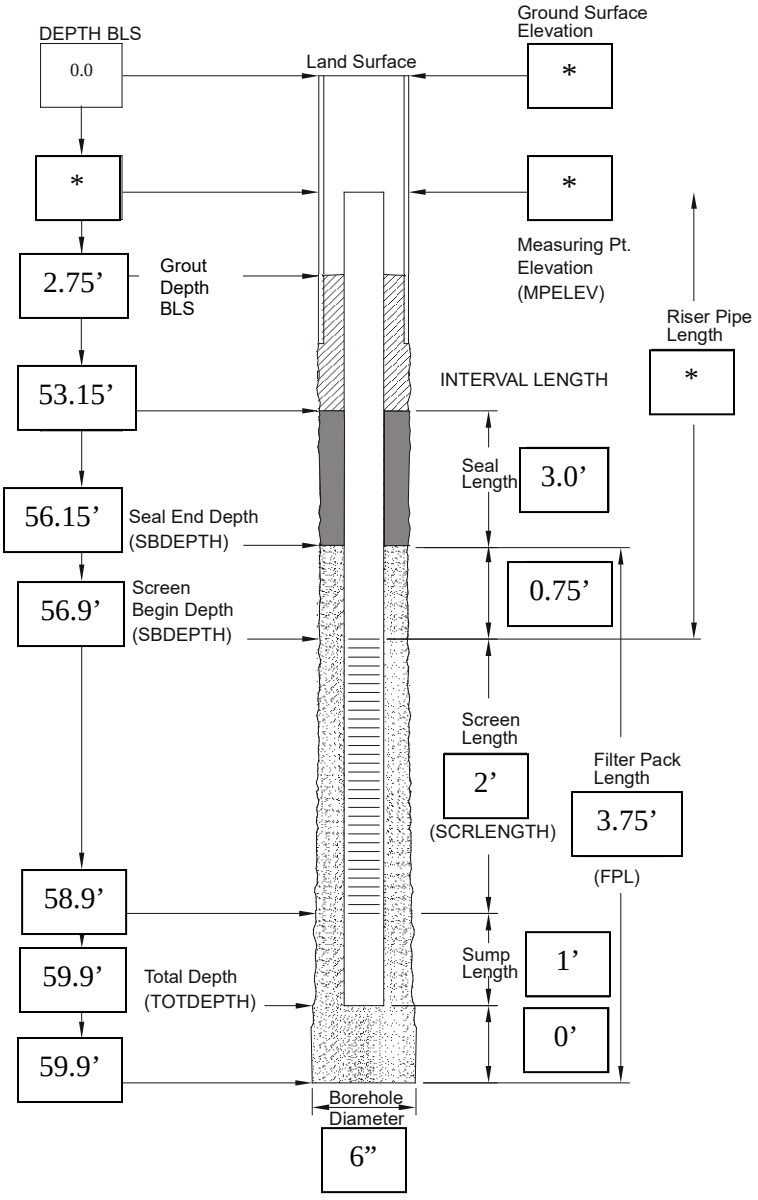
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW176
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/7/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

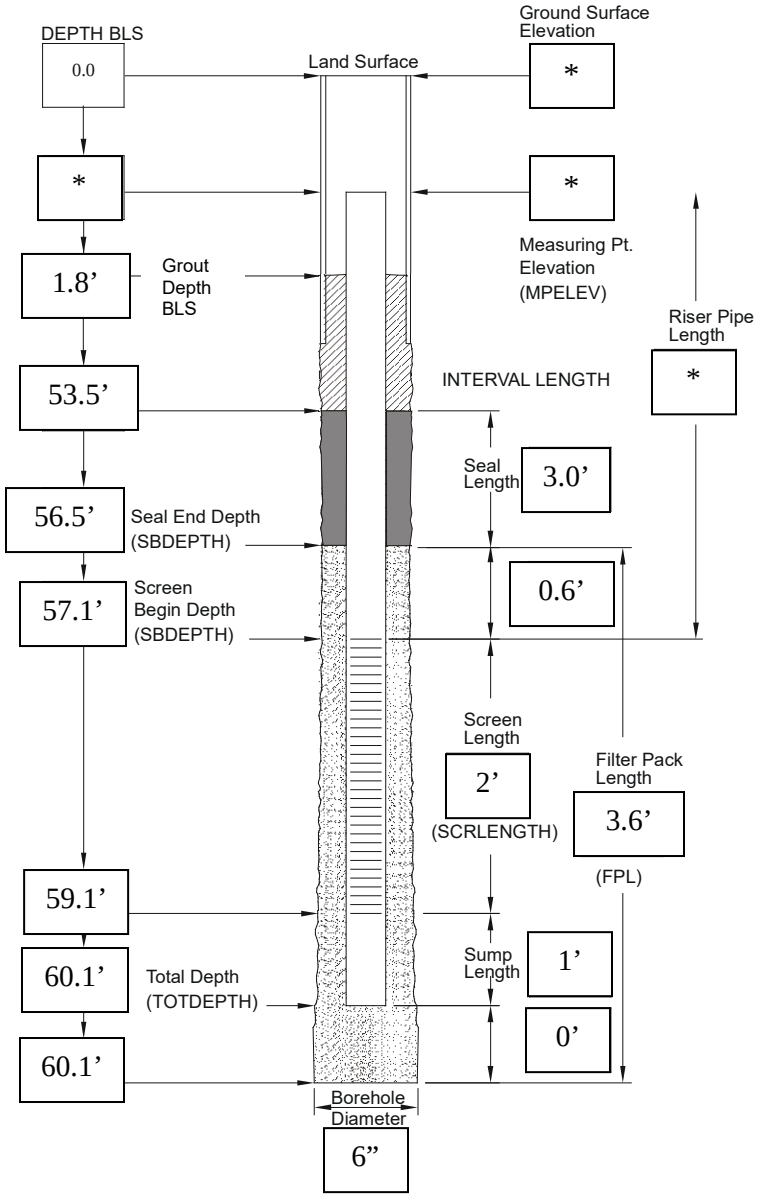
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW177
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/7/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

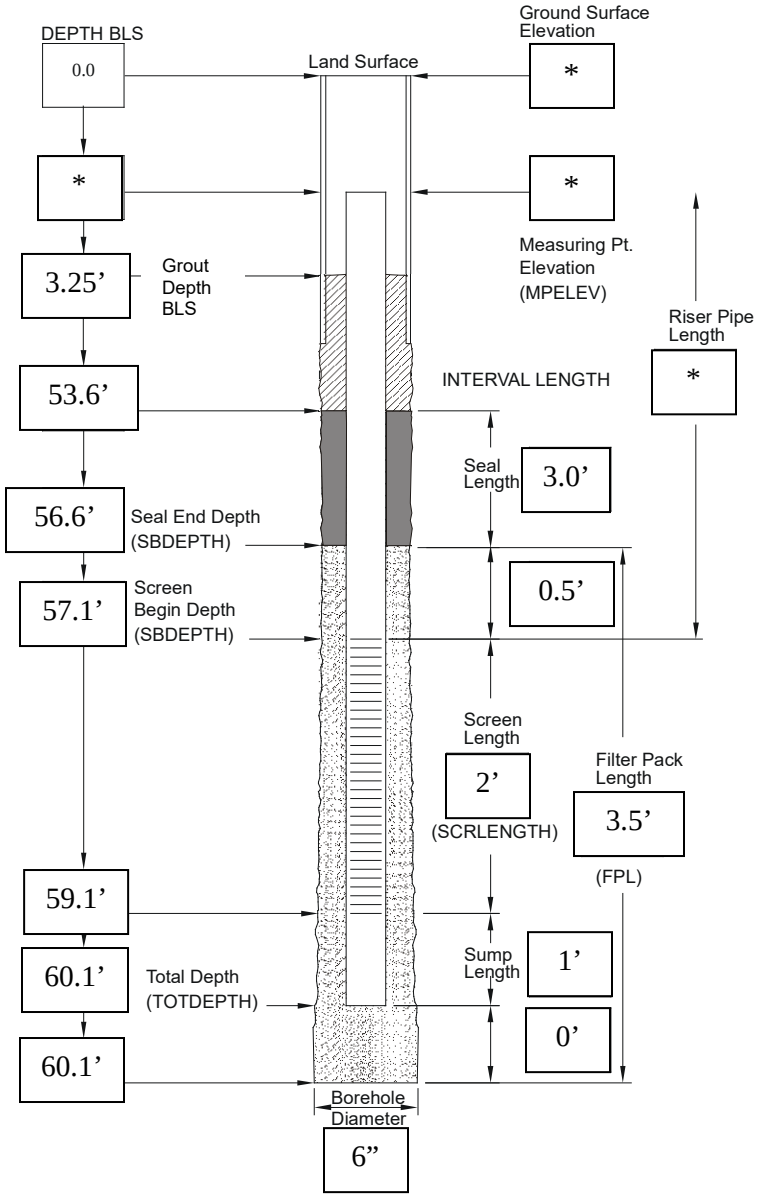
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW178
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

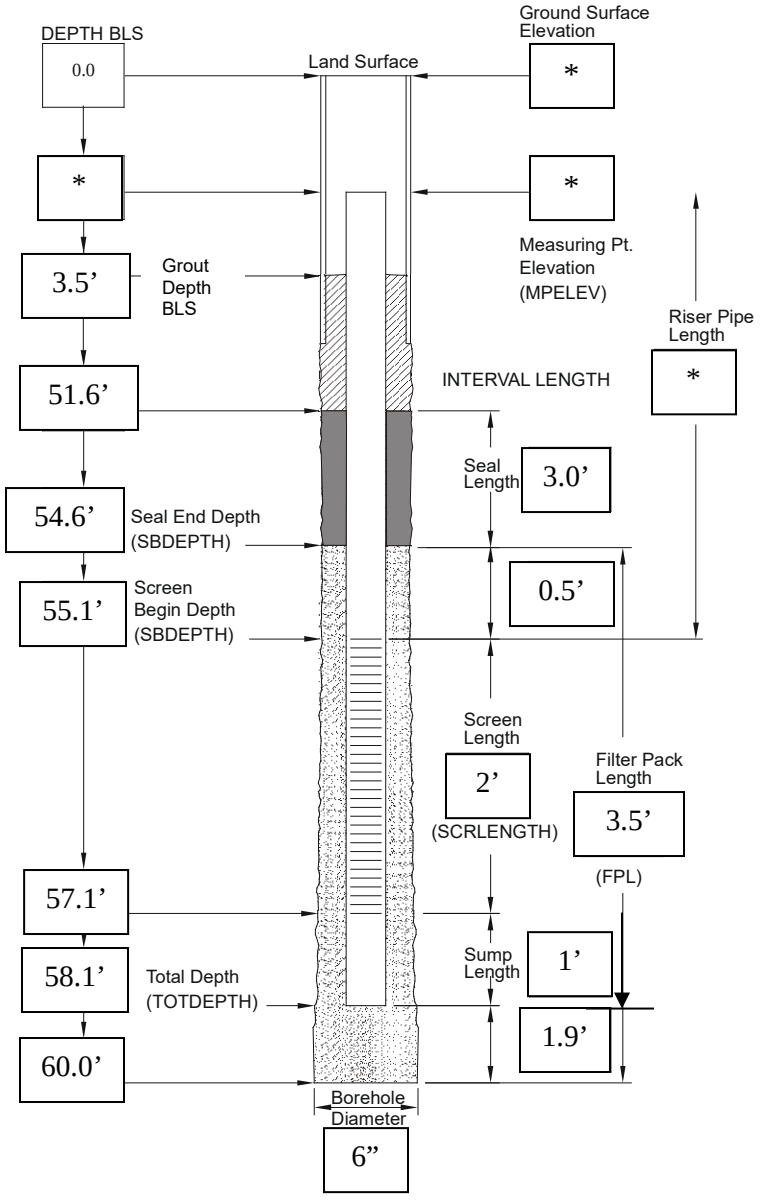
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW179
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/7/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/7/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y)/ N)
Material: Borehole collapse and 20/30 silica sand
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

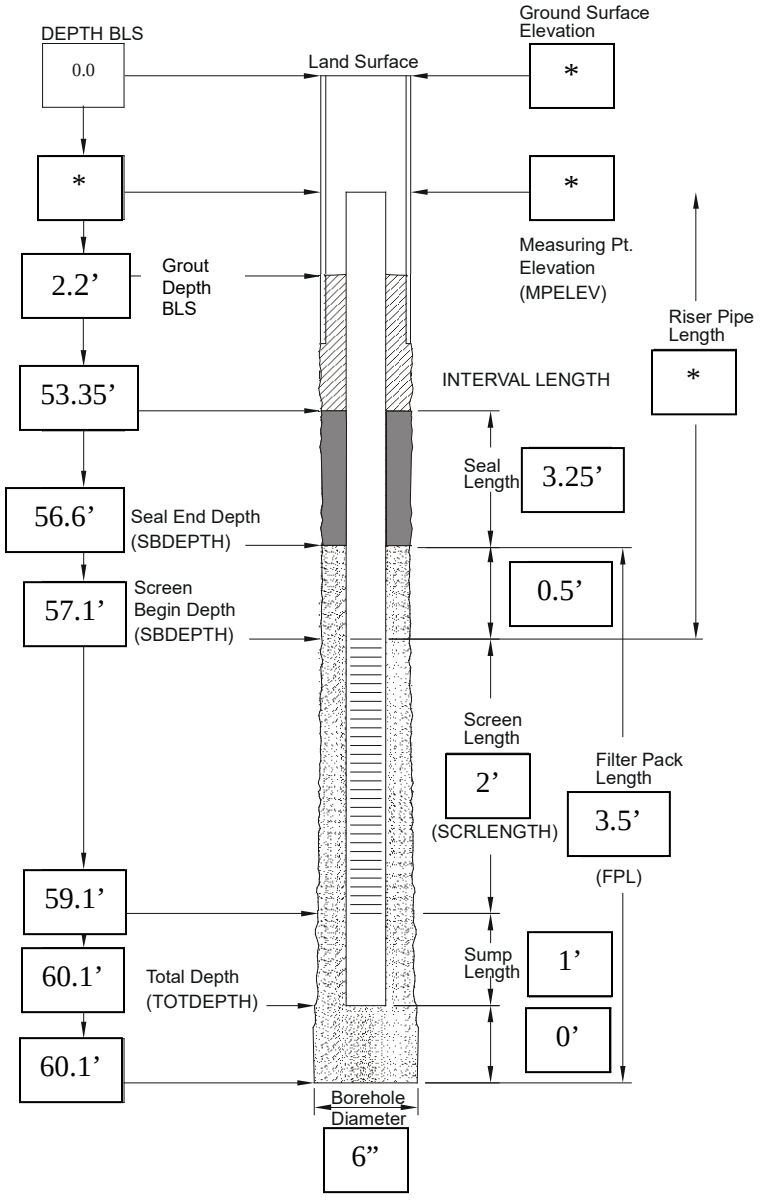
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW180
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/17/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/17/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

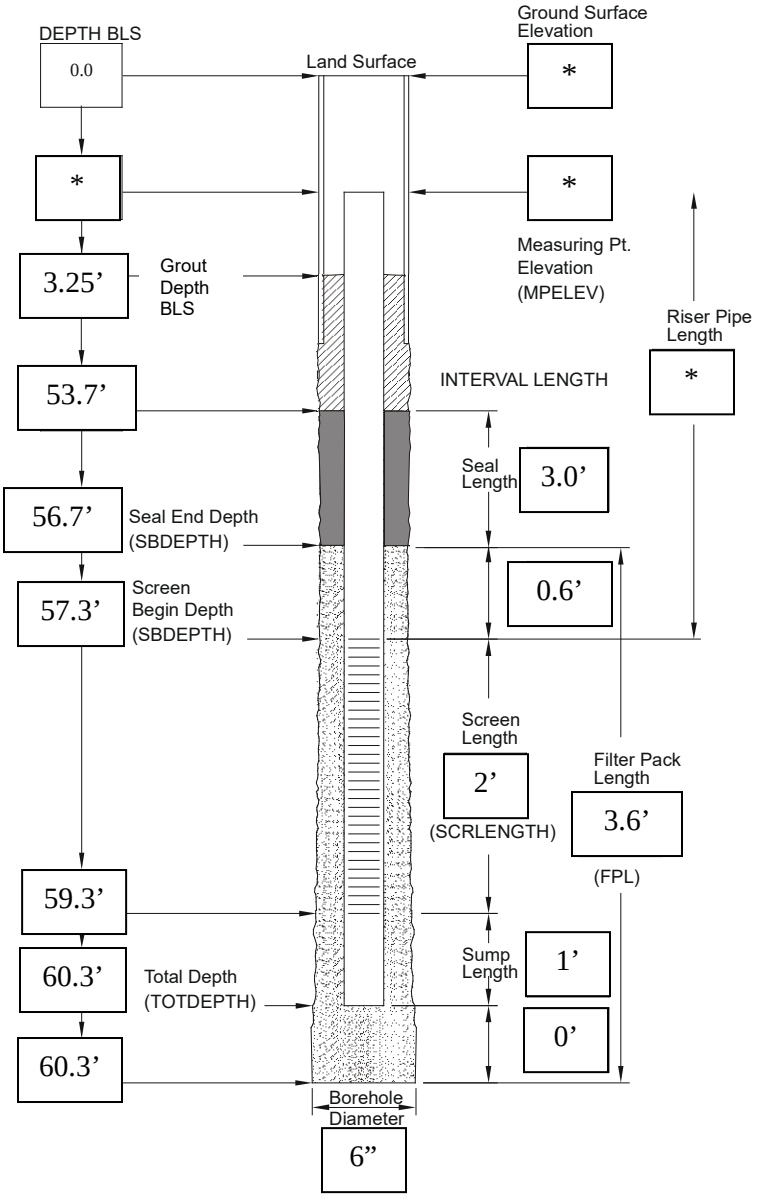
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW181
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/9/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

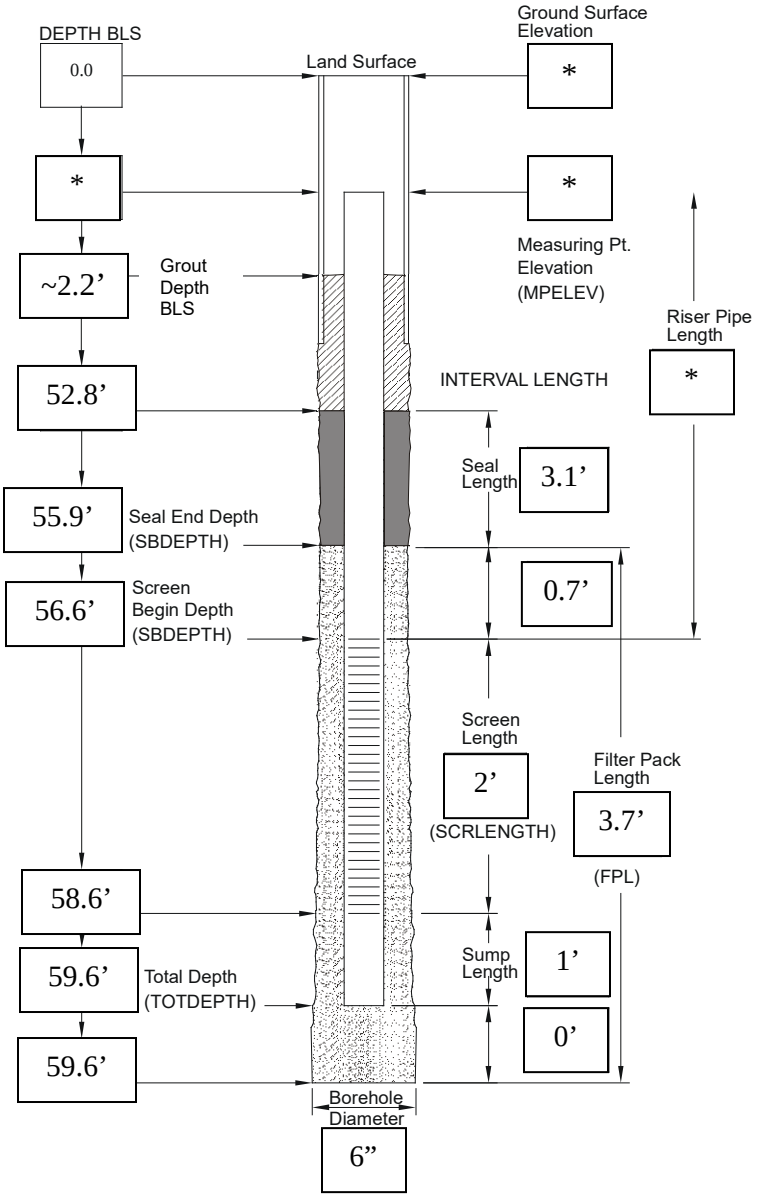
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW182
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/13/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/13/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASW; information provided in CCR

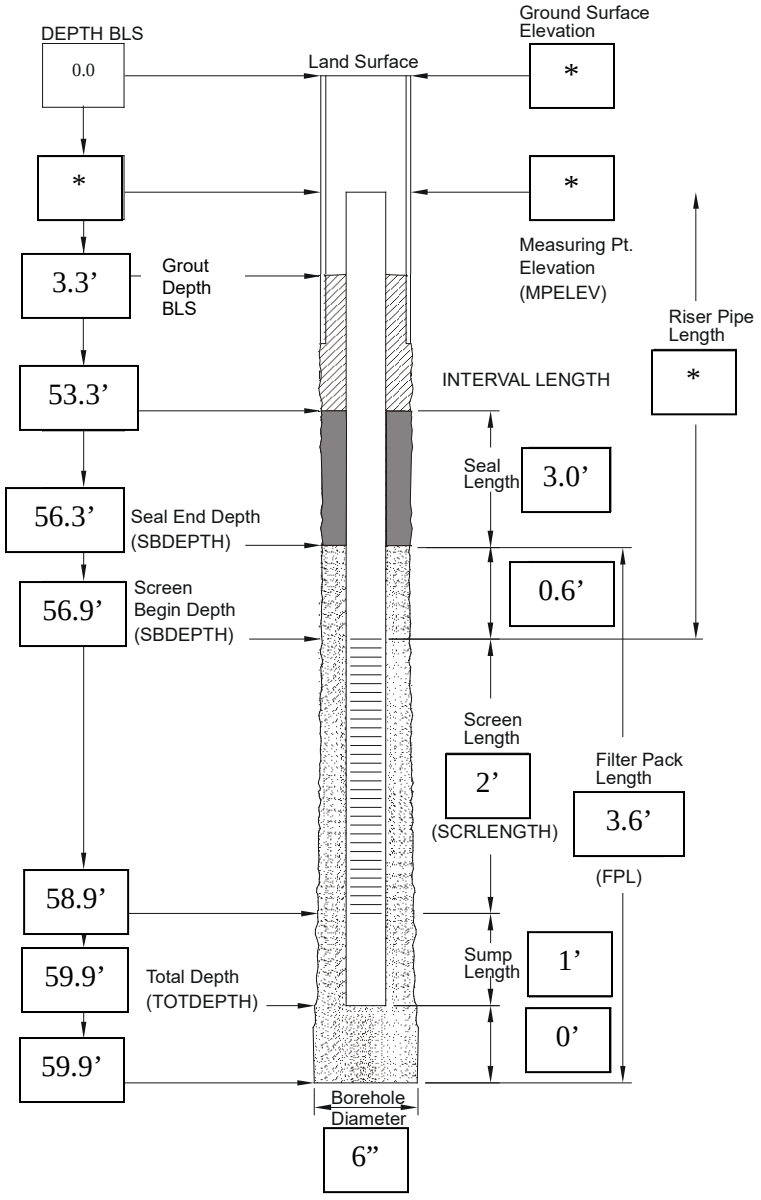
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW183
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/9/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

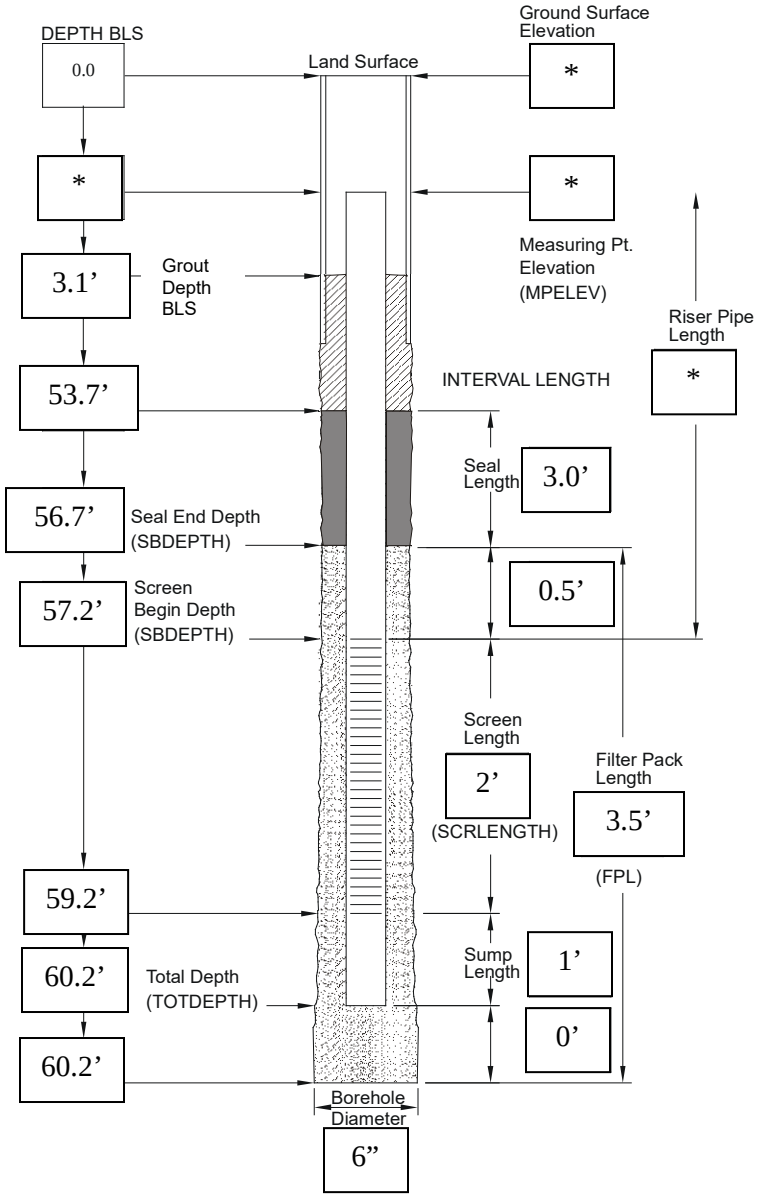
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW184
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*Completion at later date will be included in CCR

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/8/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

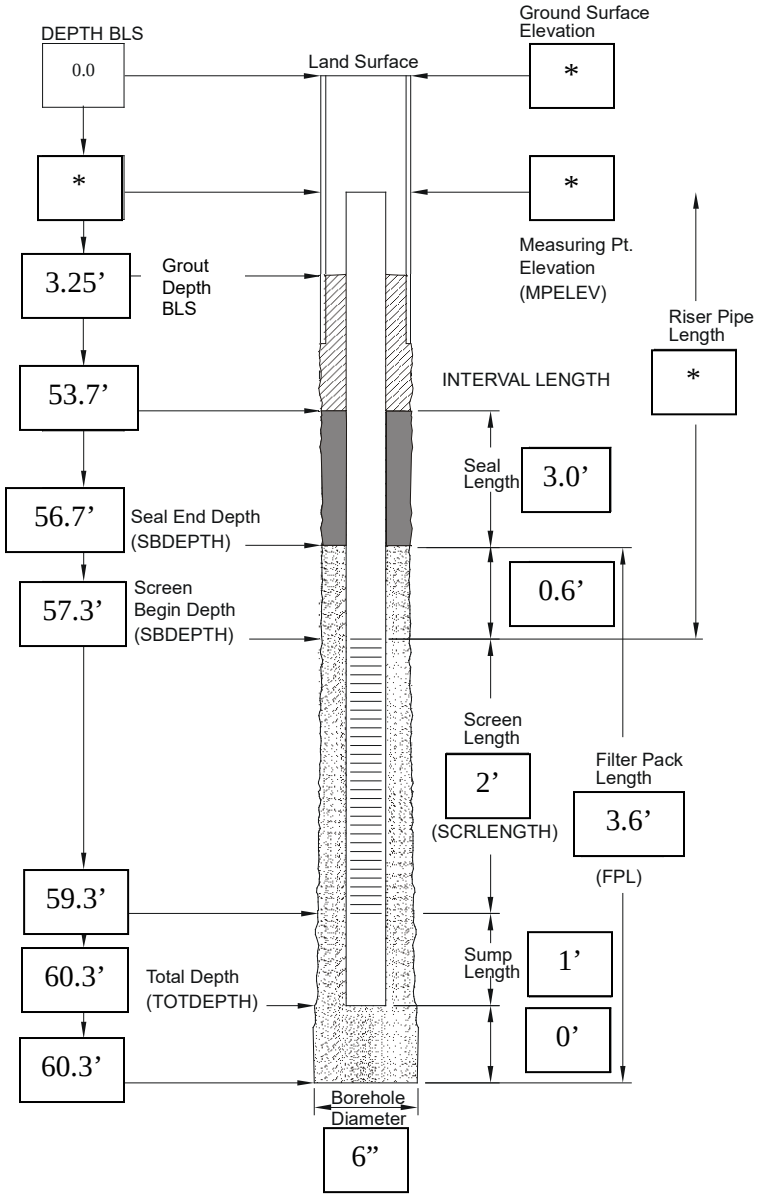
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW185
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

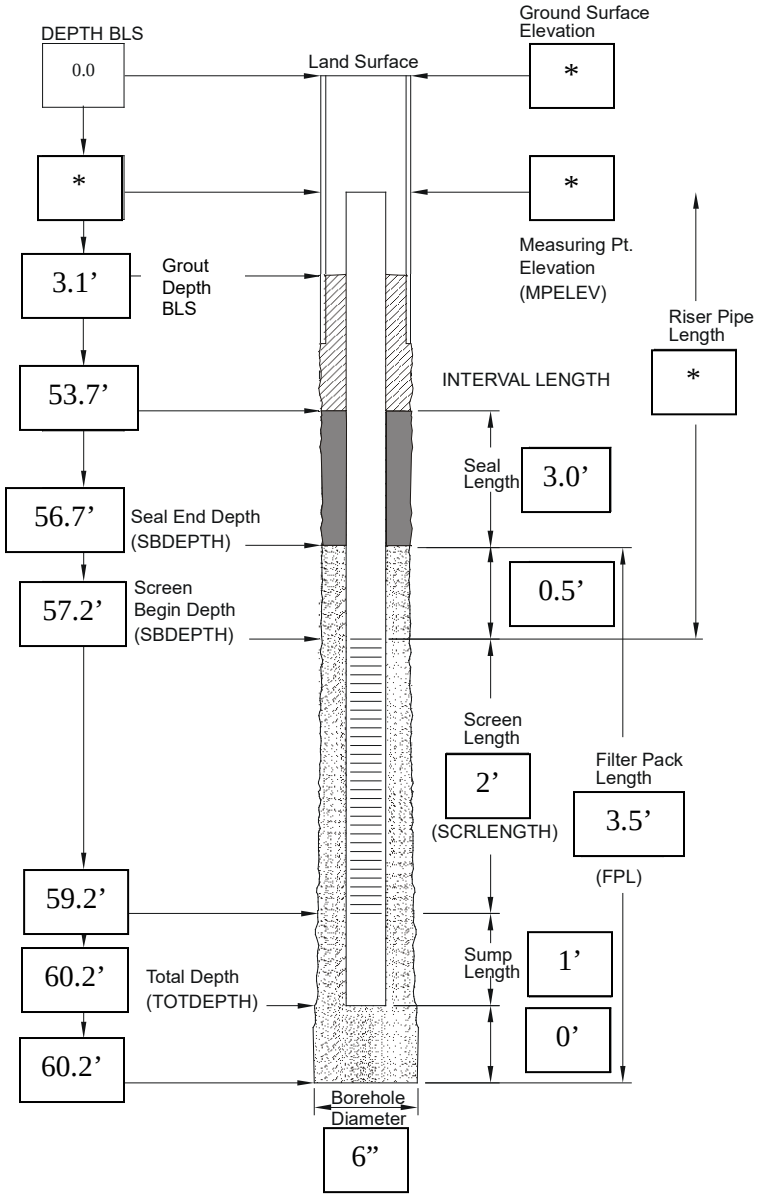
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW186
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

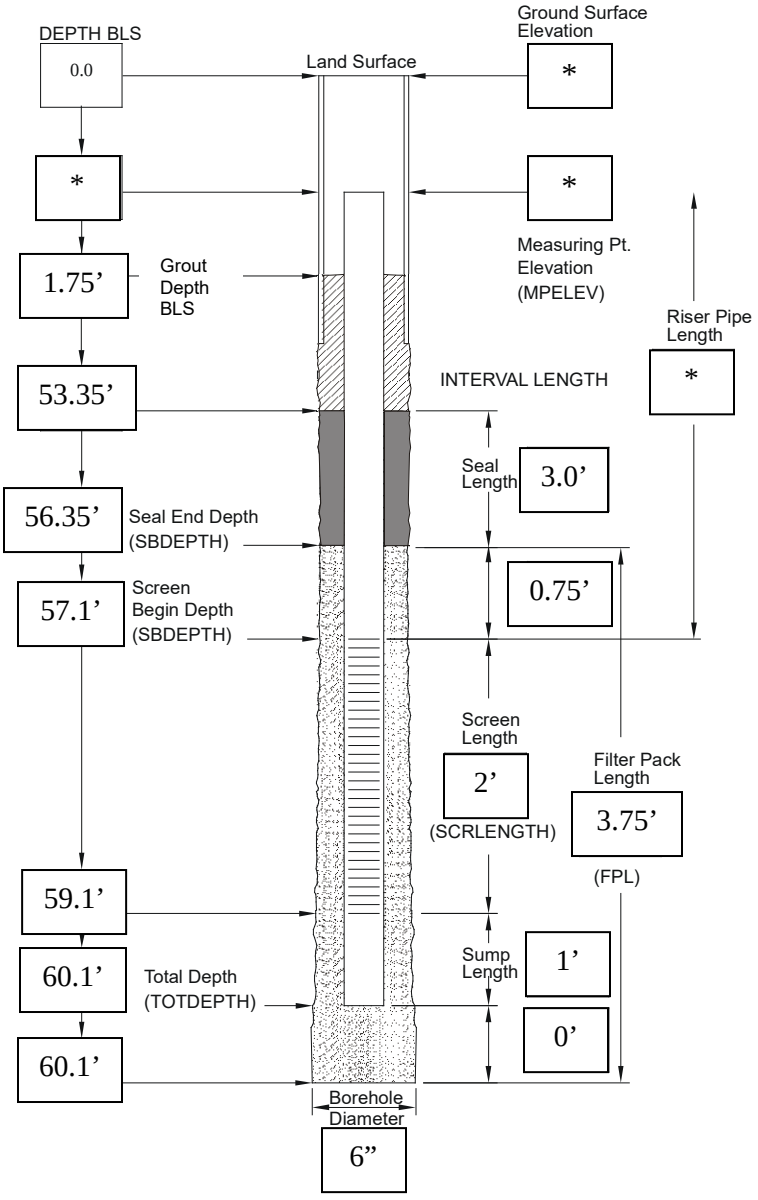
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW187
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/8/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/8/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

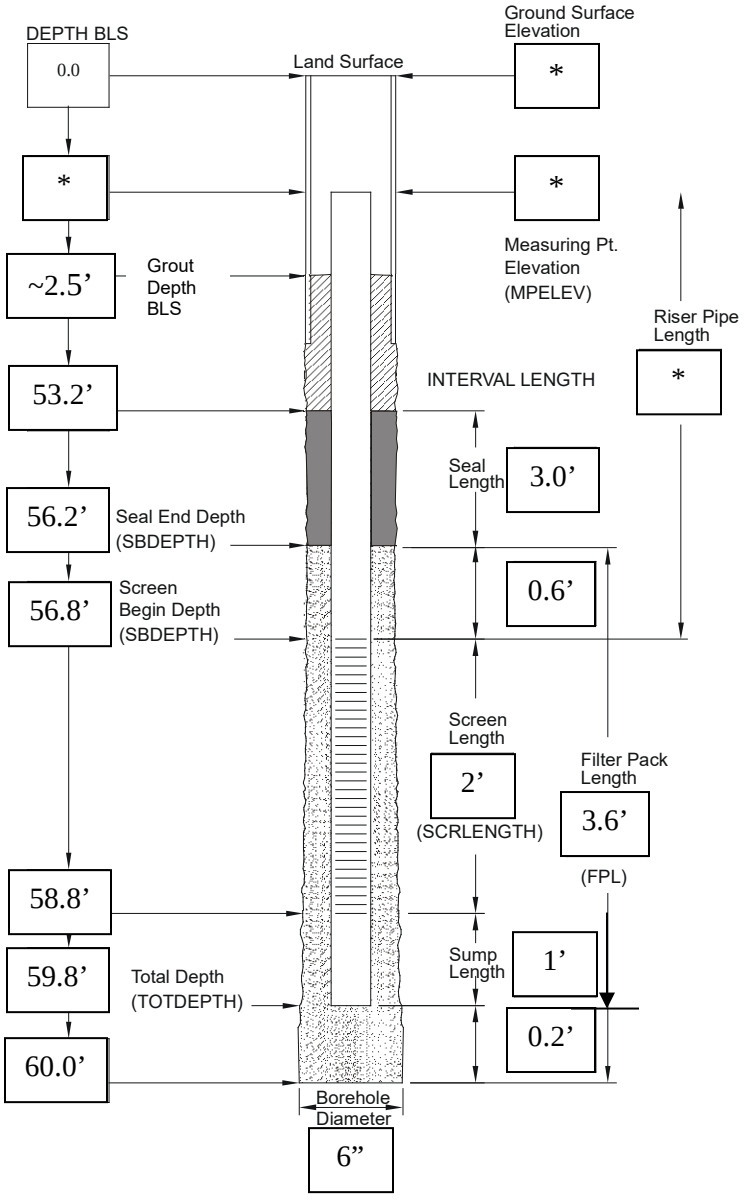
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW188
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/10/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/10/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC will complete well
Well screened ~57-59 ft BLS

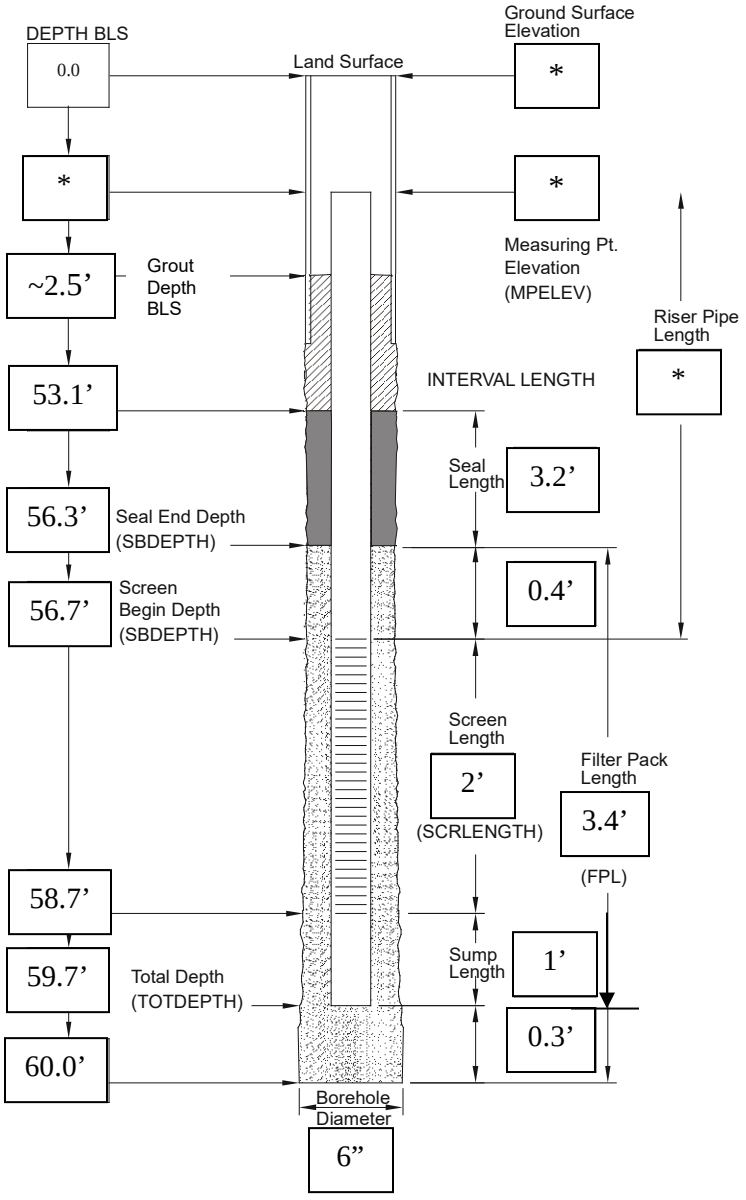
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW189
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Alex Warzinski
Signature: Alex Warzinski

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/10/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC will complete well
Well screened ~57-59 ft BLS

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: None
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/10/17
Type: Bentonite pellets (uncoated, 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Through casing
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

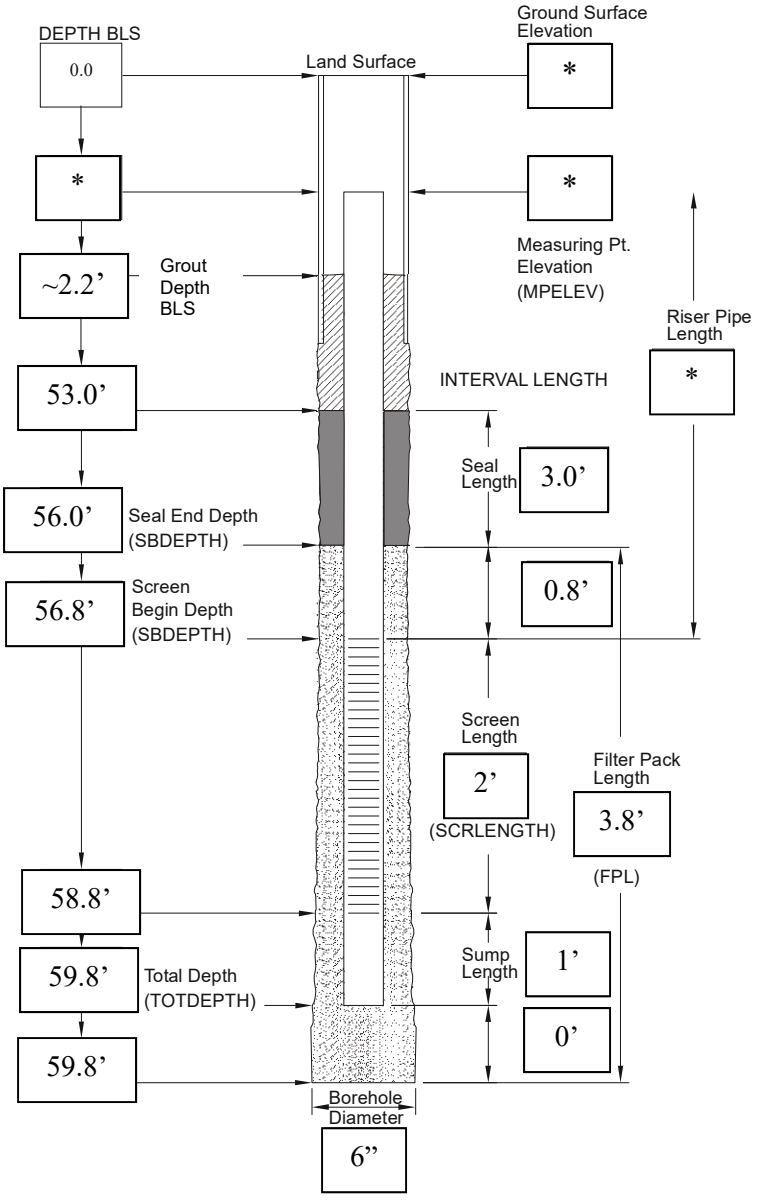
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW190
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/16/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

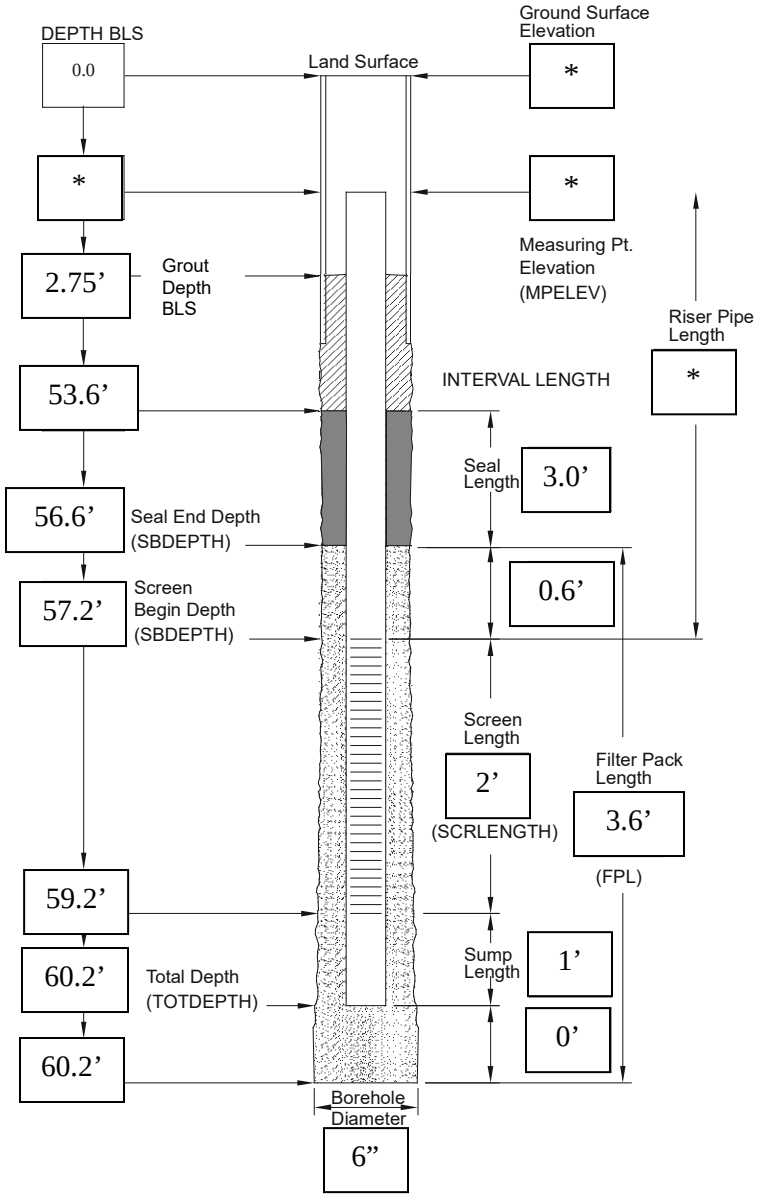
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW191
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/6/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/6/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well completion at later date will be included in CCR

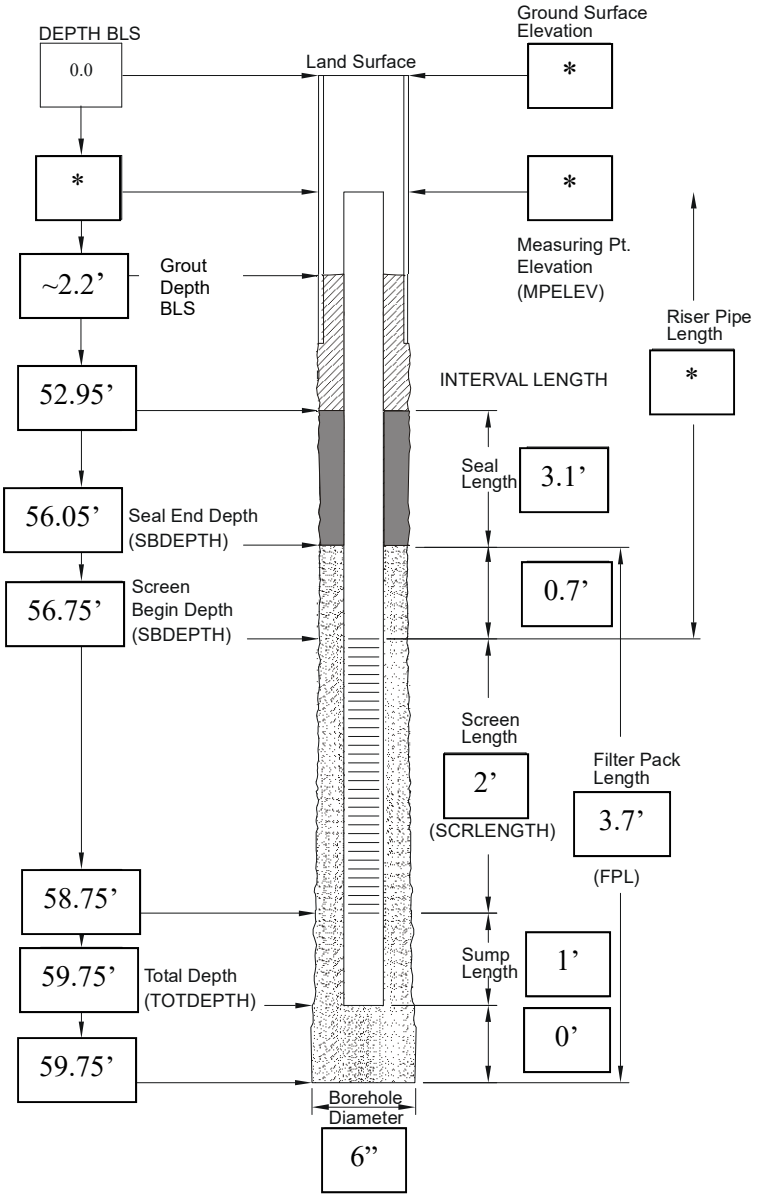
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW192
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/16/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

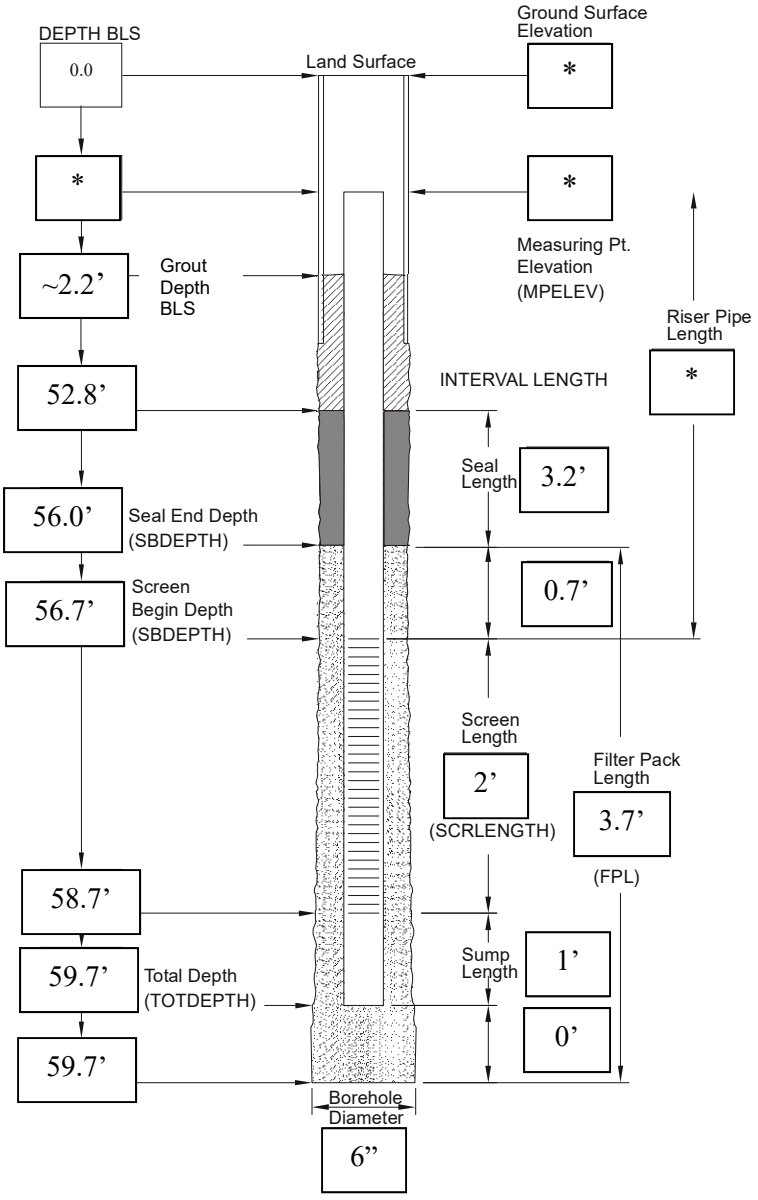
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW193
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/16/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

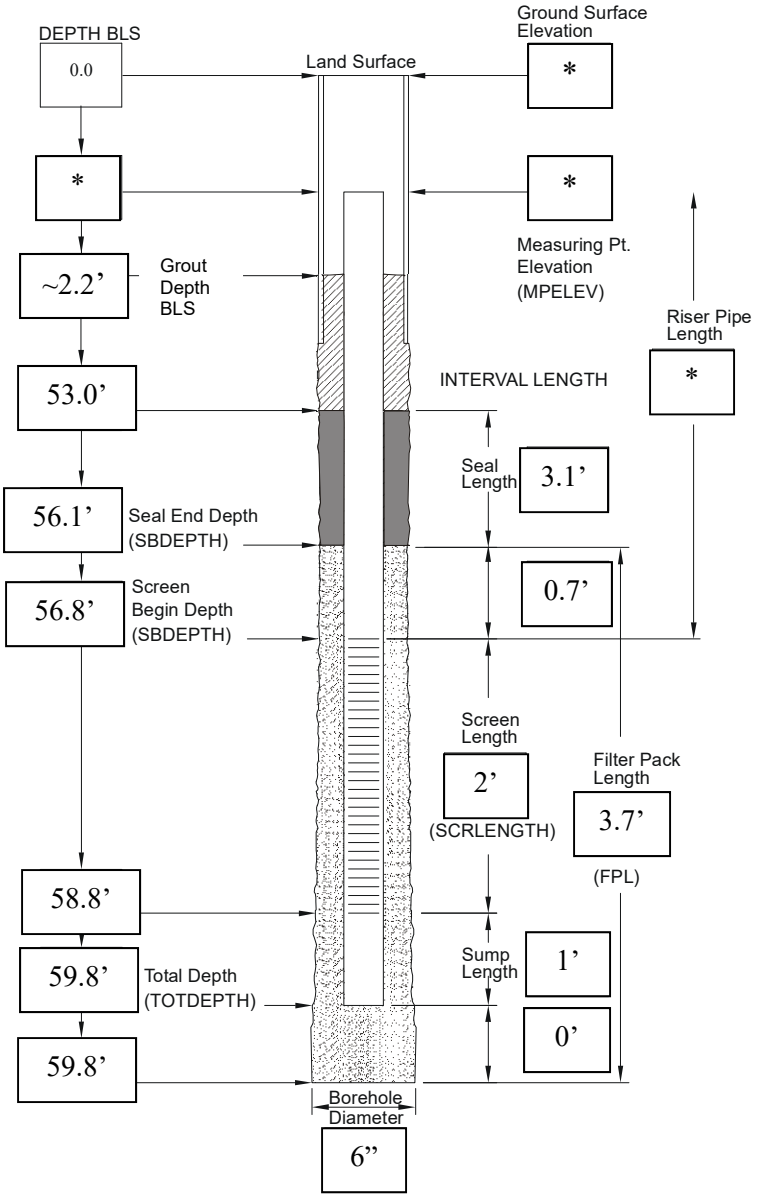
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW194
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/16/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

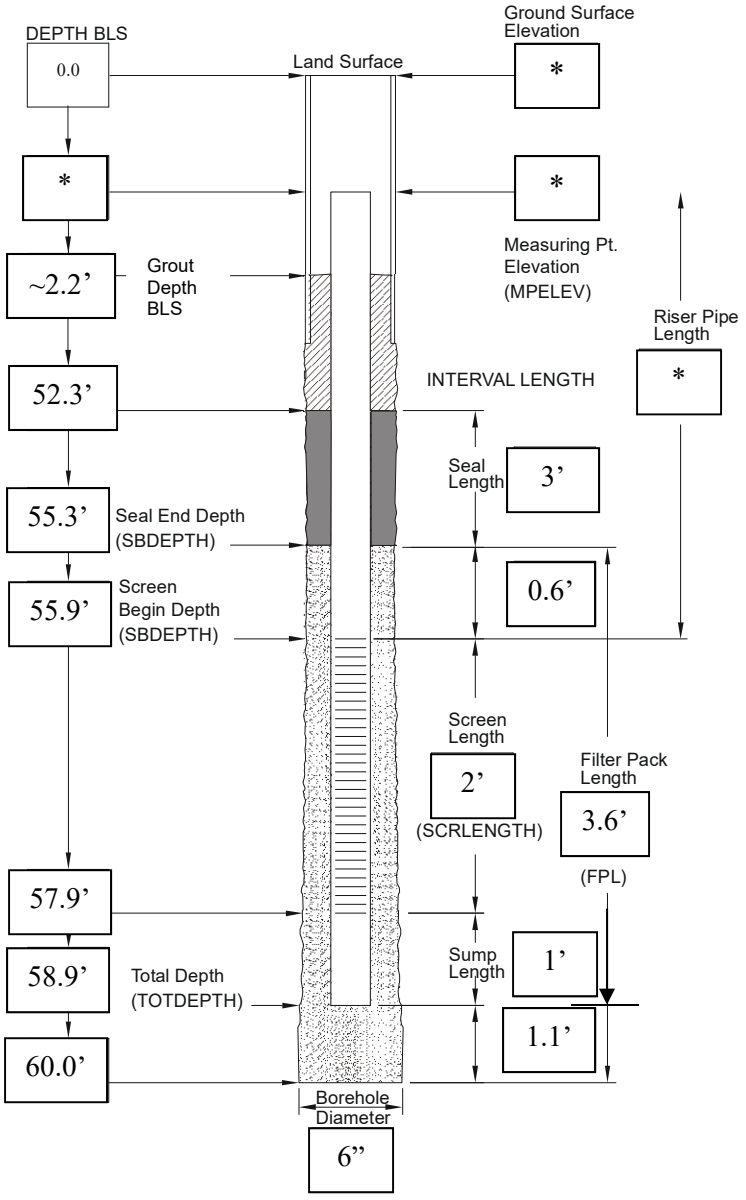
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW195
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/3/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/3/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: 20/30 sand and formation collapse
Placement Method: Pour through tooling
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

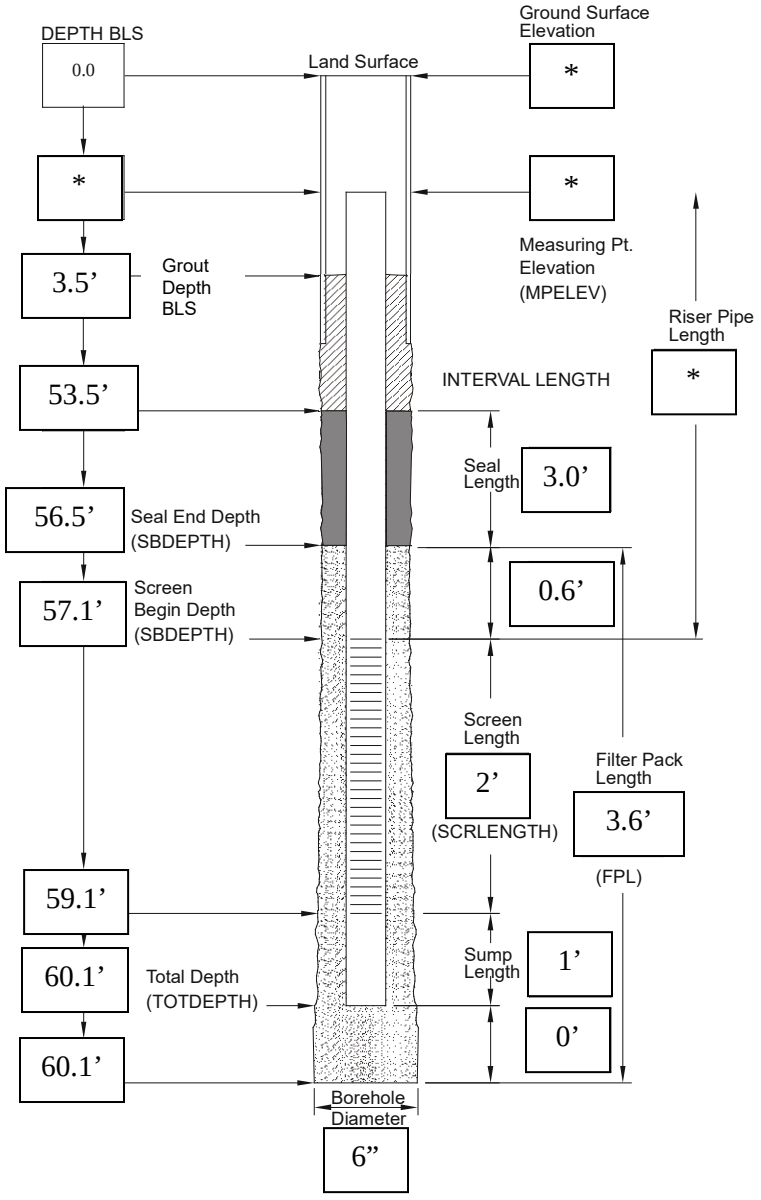
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW196
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/6/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/6/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

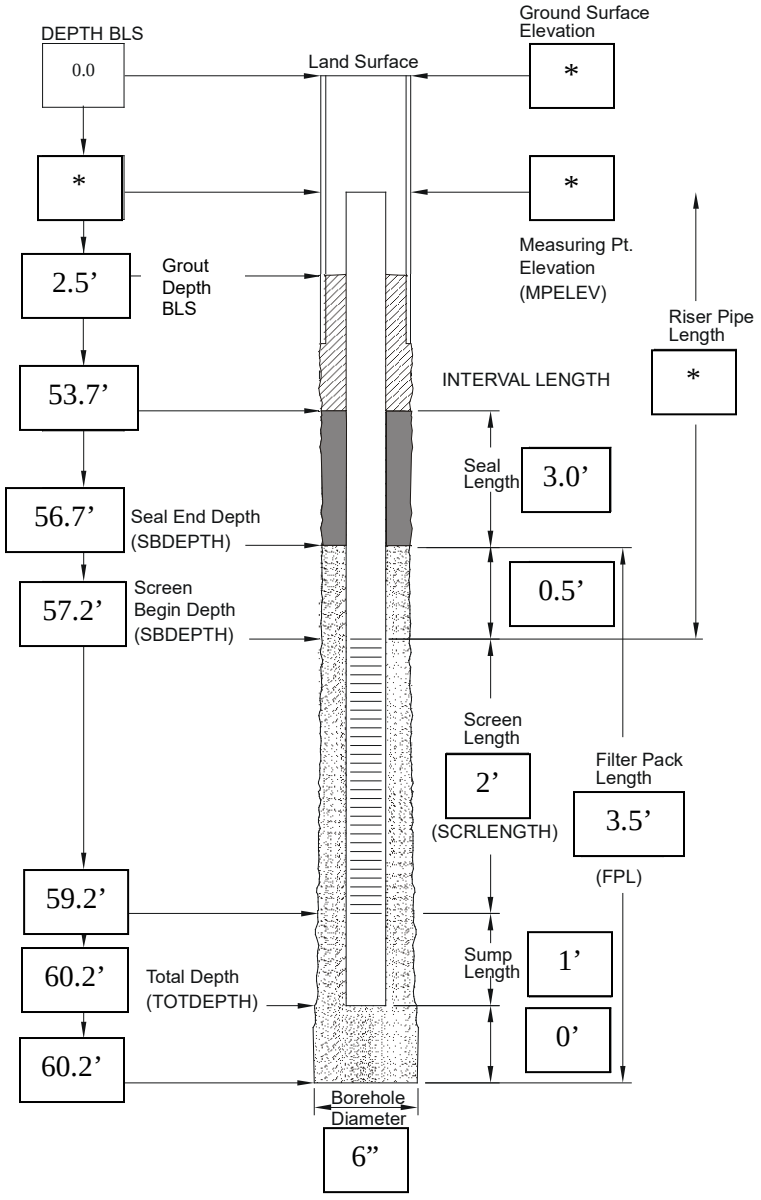
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW197
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/6/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/6/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

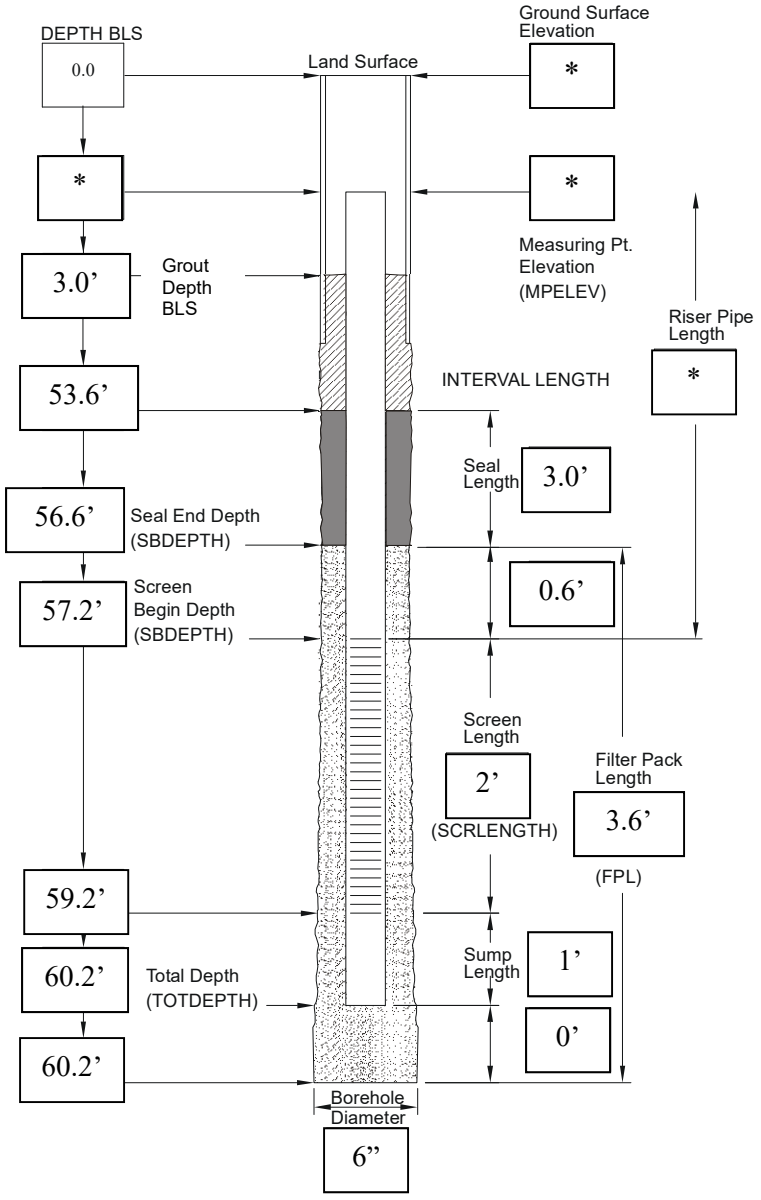
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW198
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/6/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/6/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Will be completed at later date and included in CCR

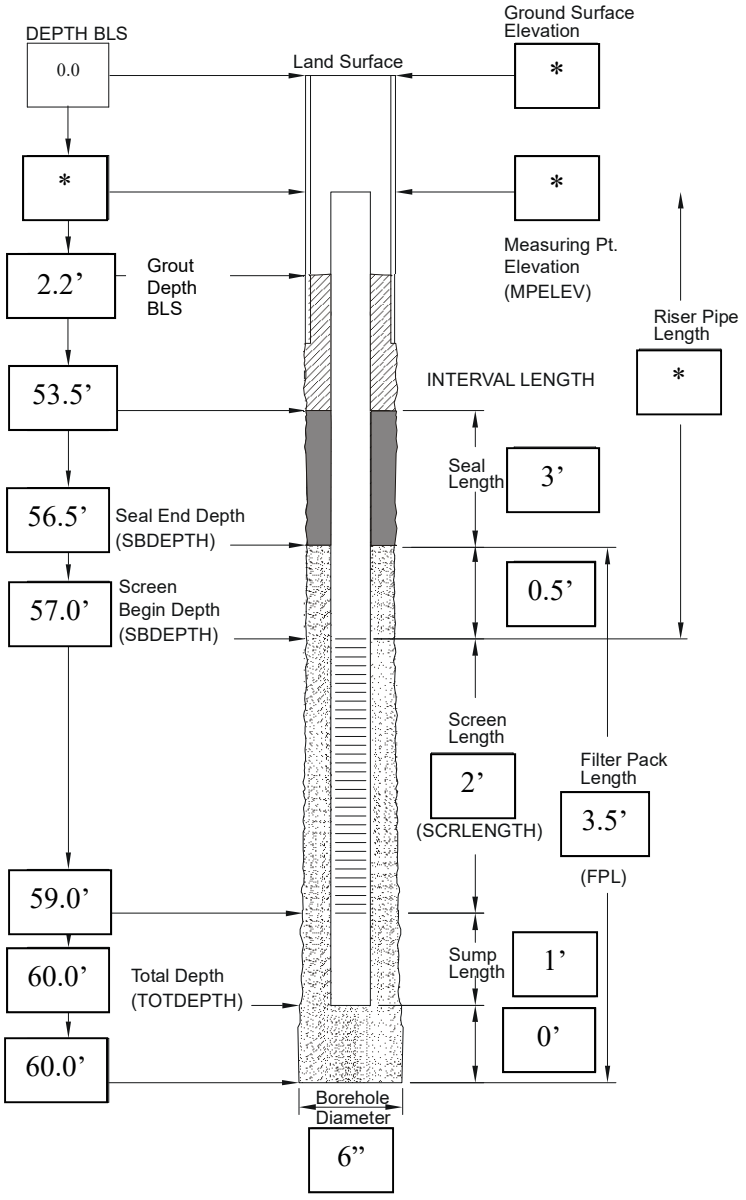
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW199
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/3/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/3/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

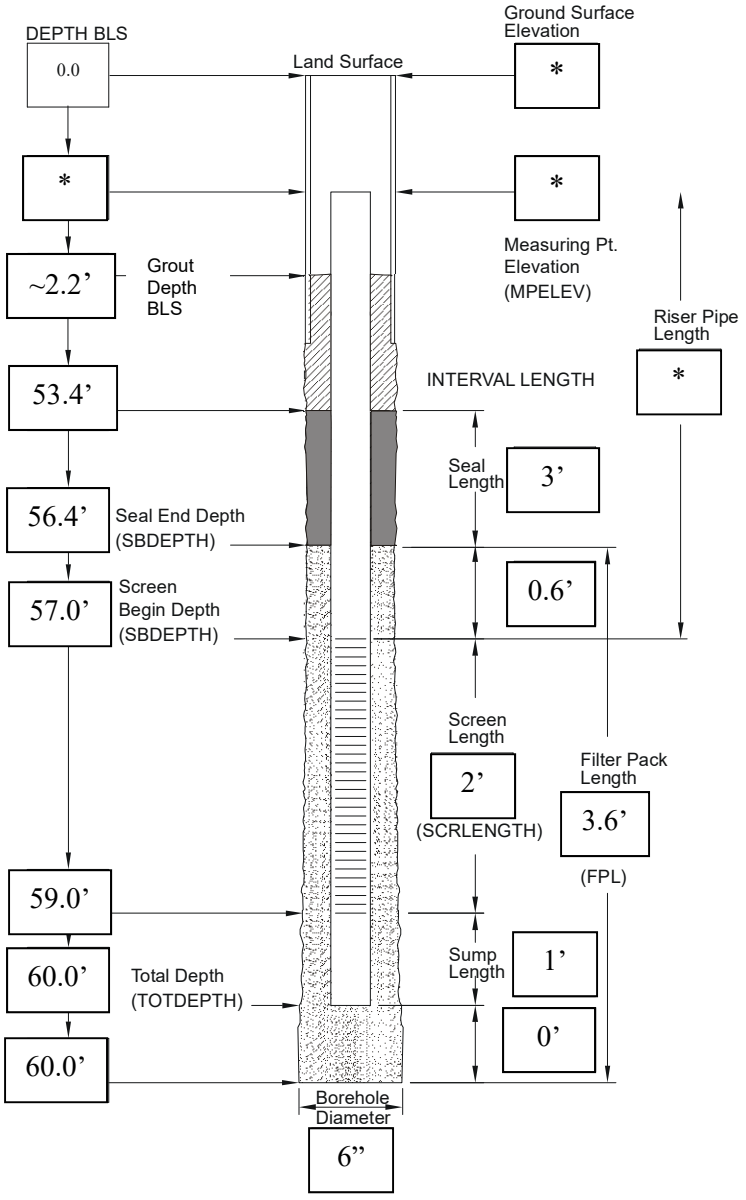
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW200
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/3/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/3/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

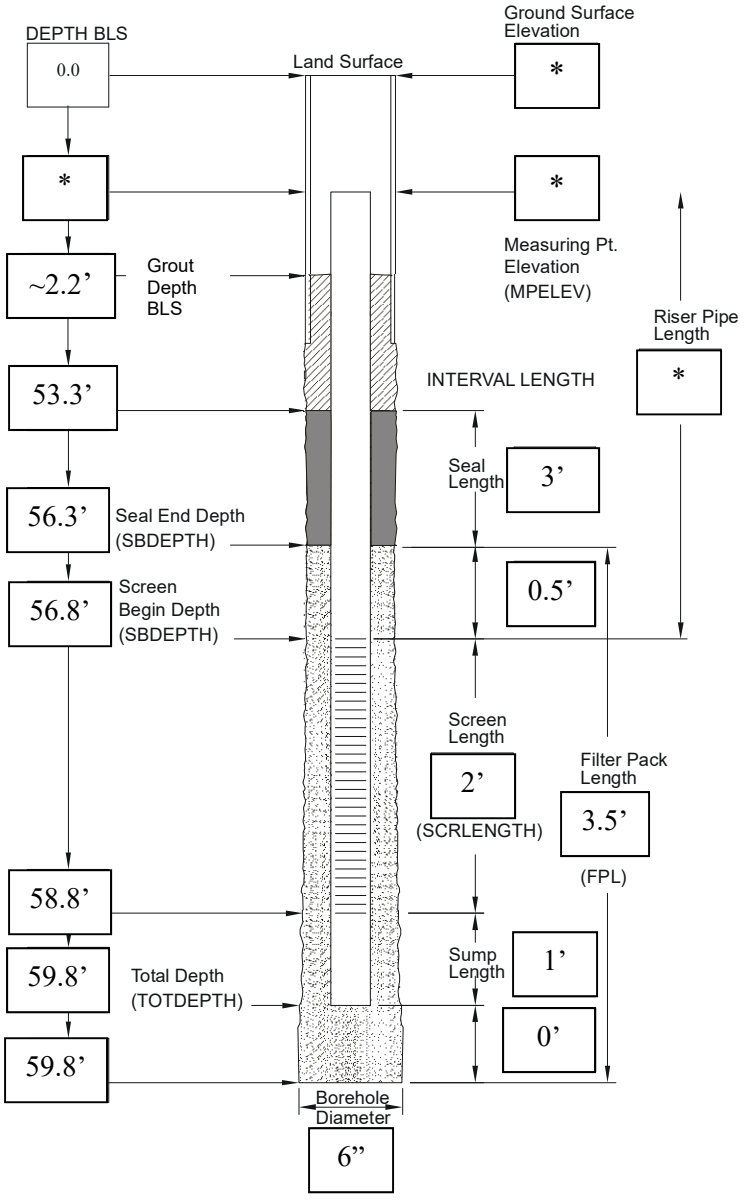
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW201
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/3/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/3/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

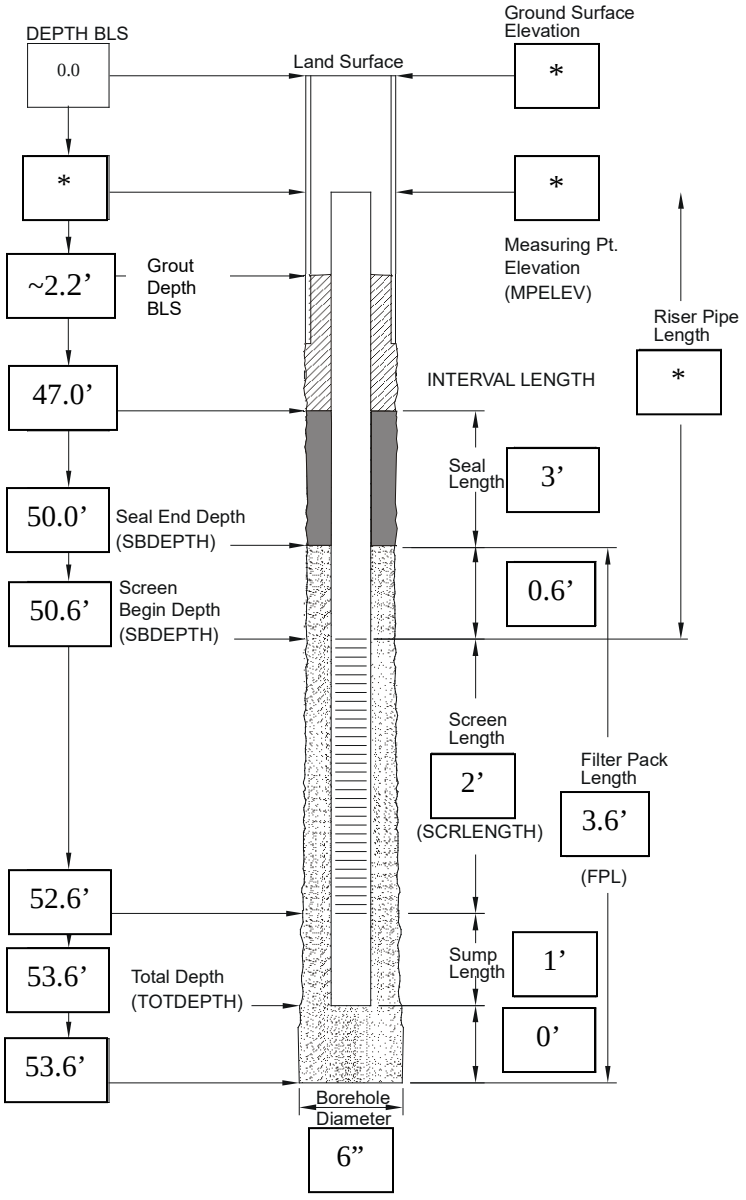
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW202
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/2/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

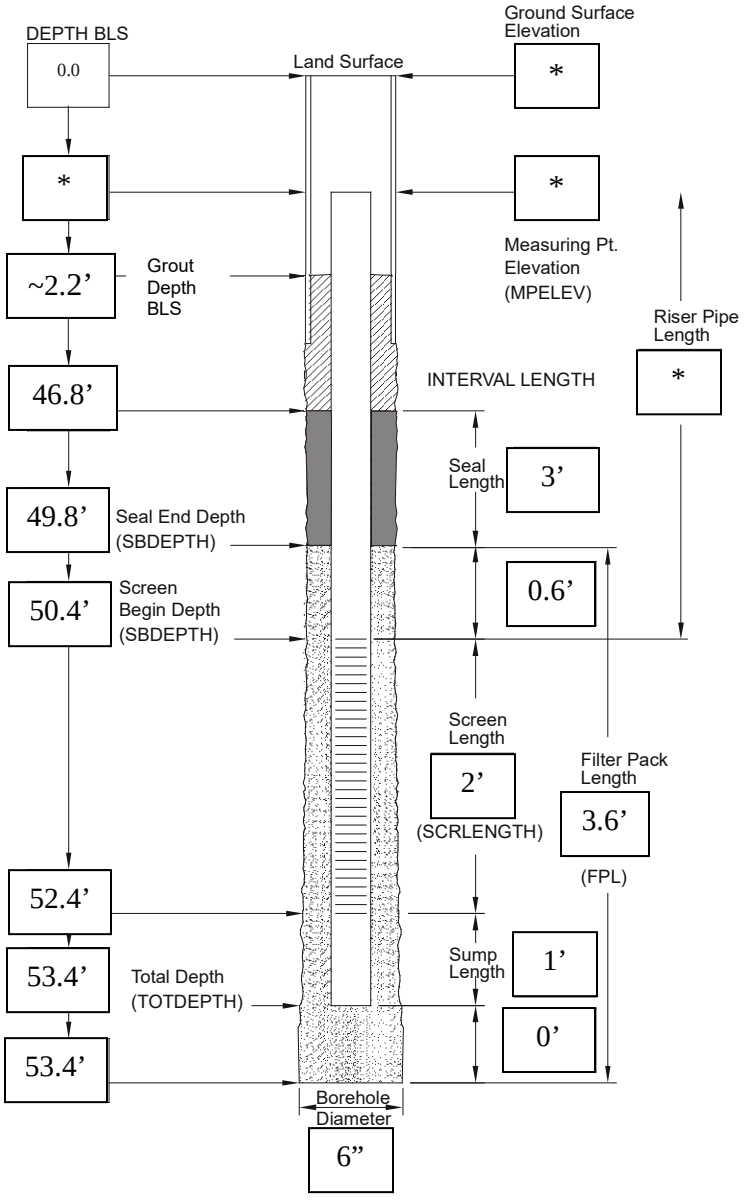
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW203
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/2/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

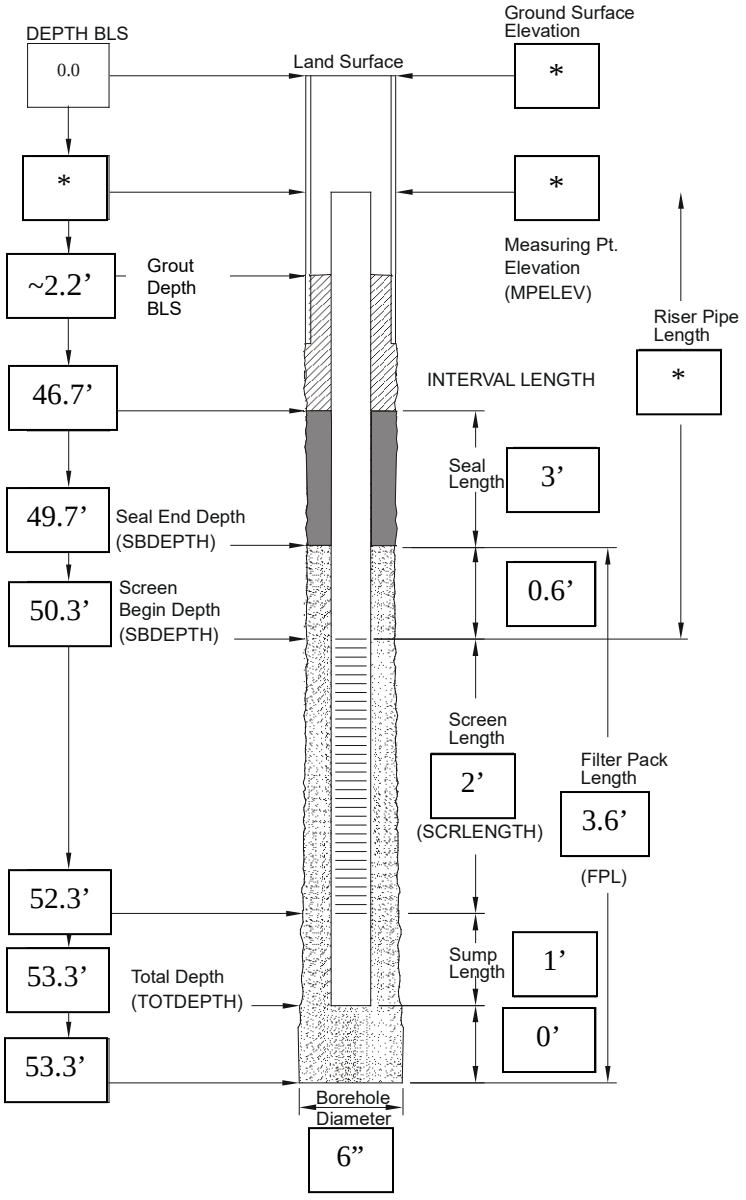
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW204
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/2/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

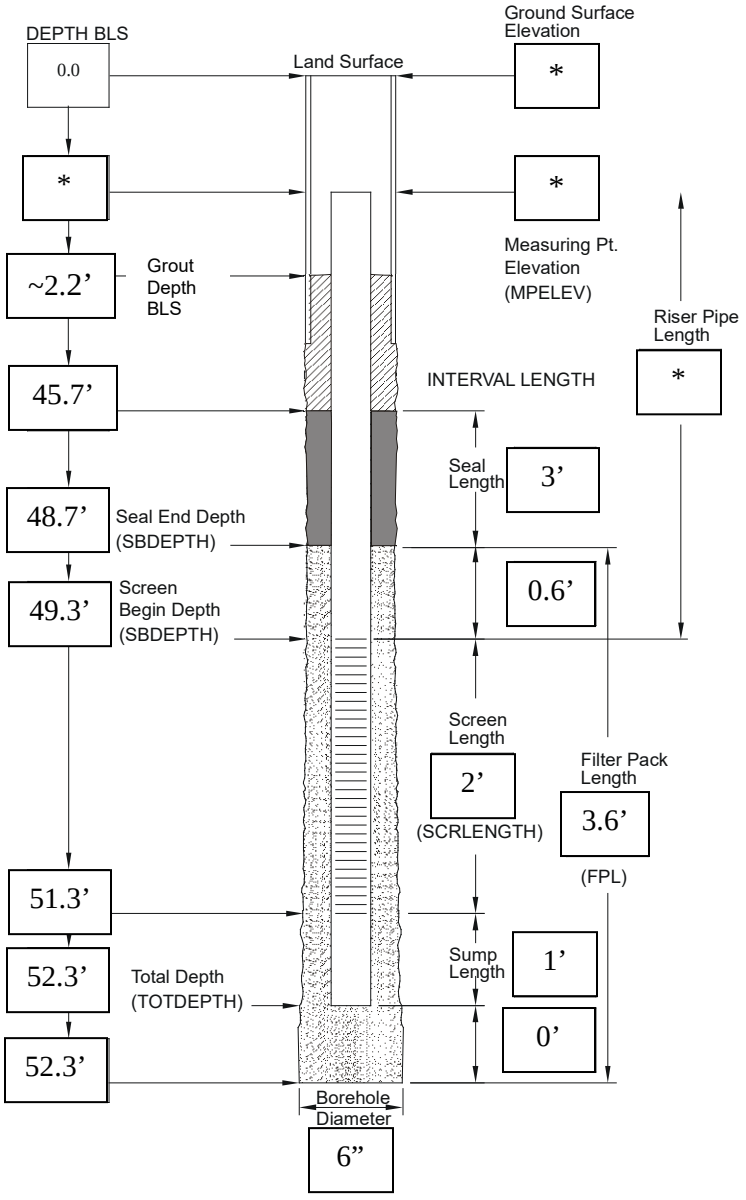
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW205
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/2/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

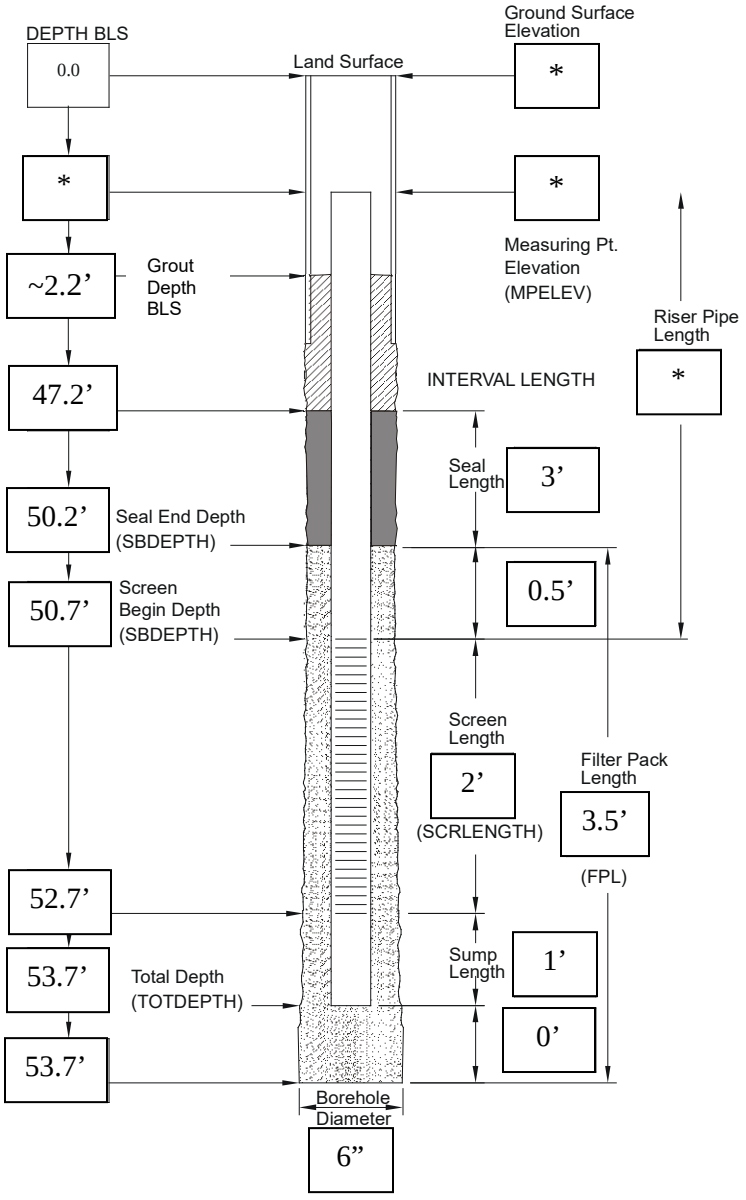
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW206
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/2/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

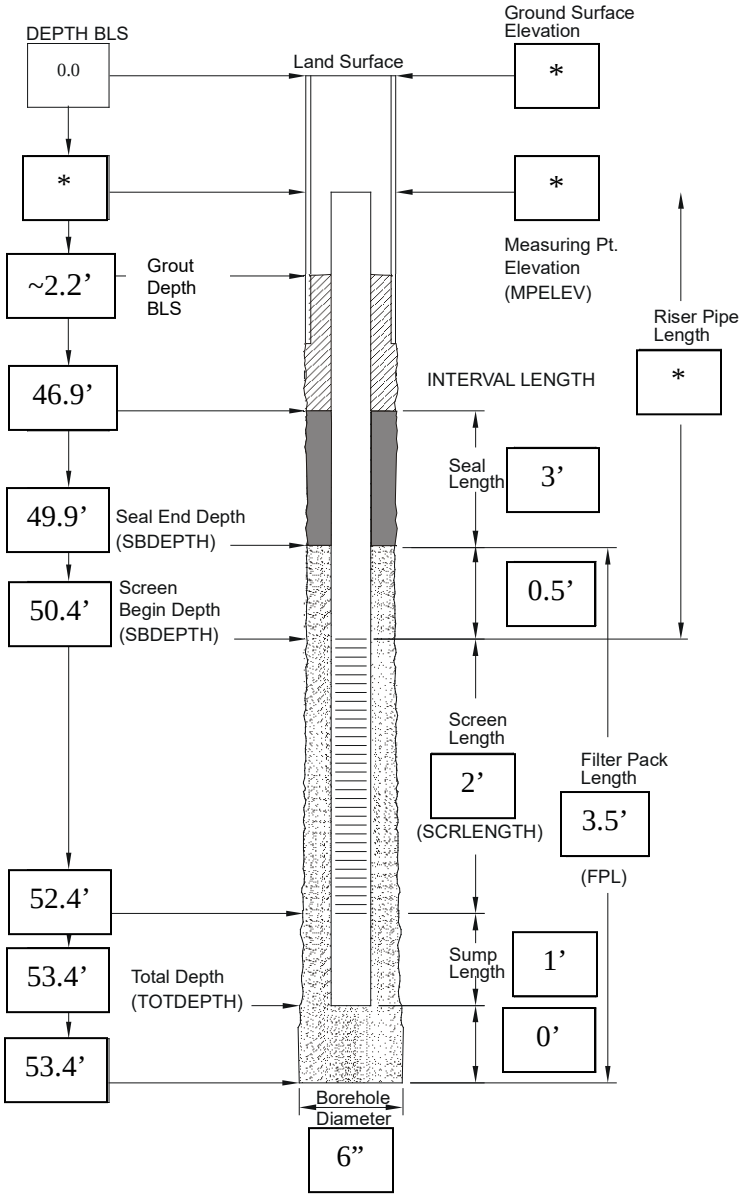
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW207
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ron Kent
Signature: Ron Kent

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/2/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/2/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through tooling
Vol. Fluid Added: None
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

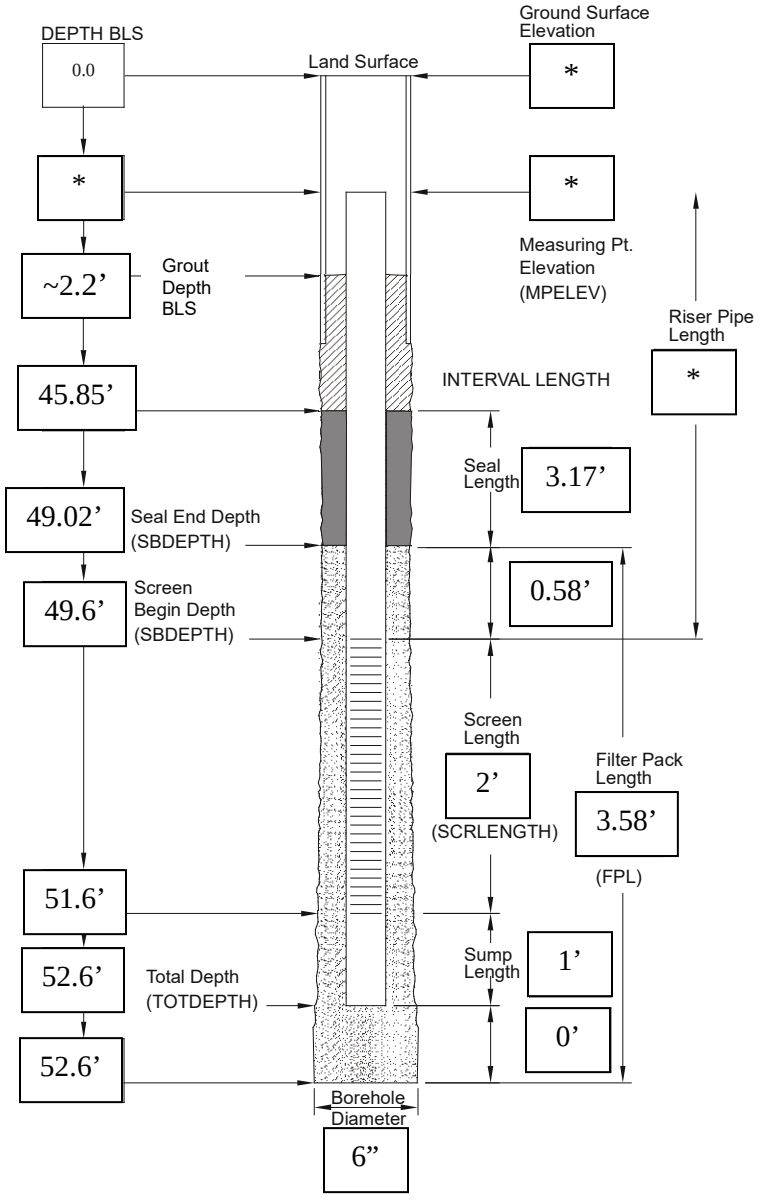
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW208
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*Well to be completed by FECC and surveyed

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/15/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

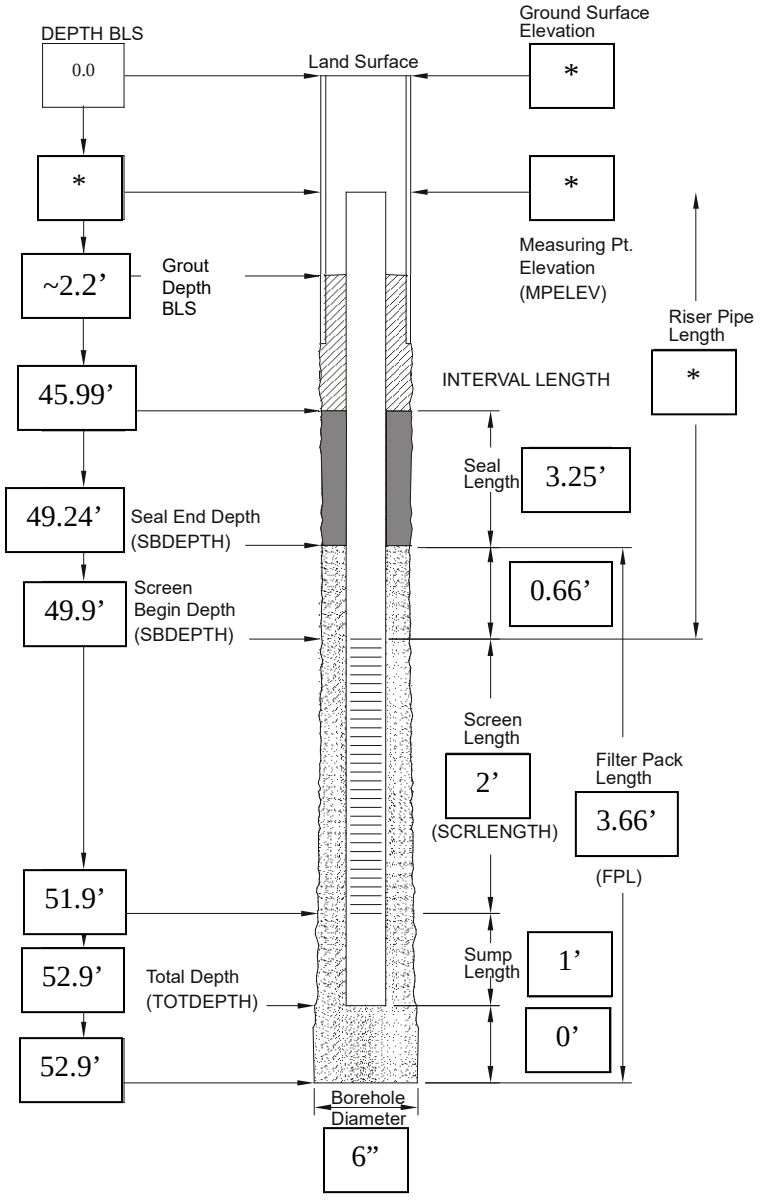
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW209
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/15/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

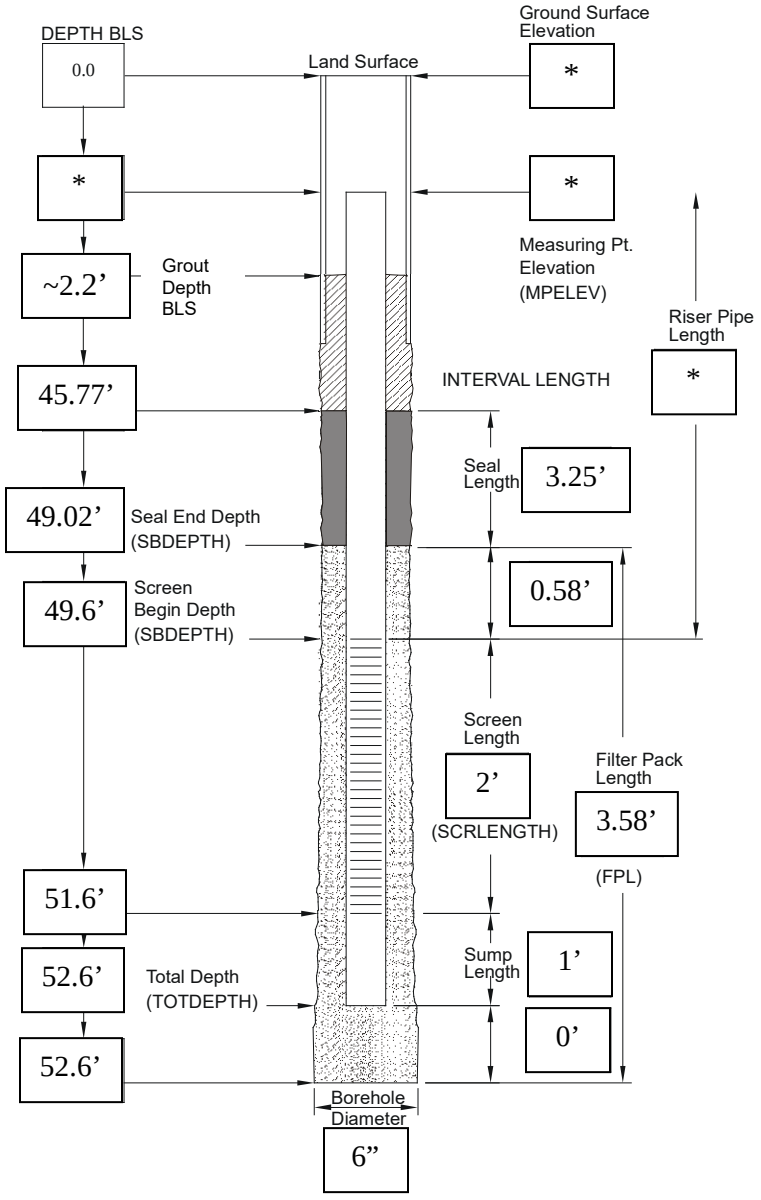
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW210
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*Well to be completed by FECC and surveyed

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/15/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

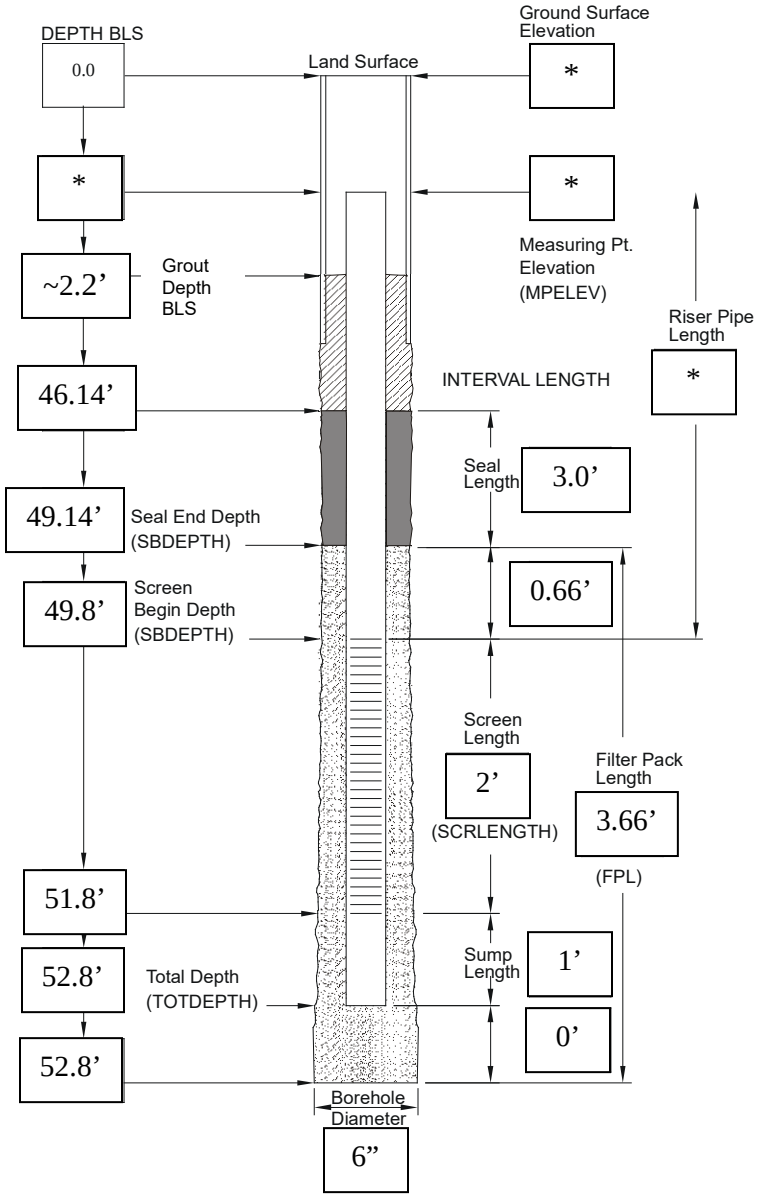
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW211
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/14/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

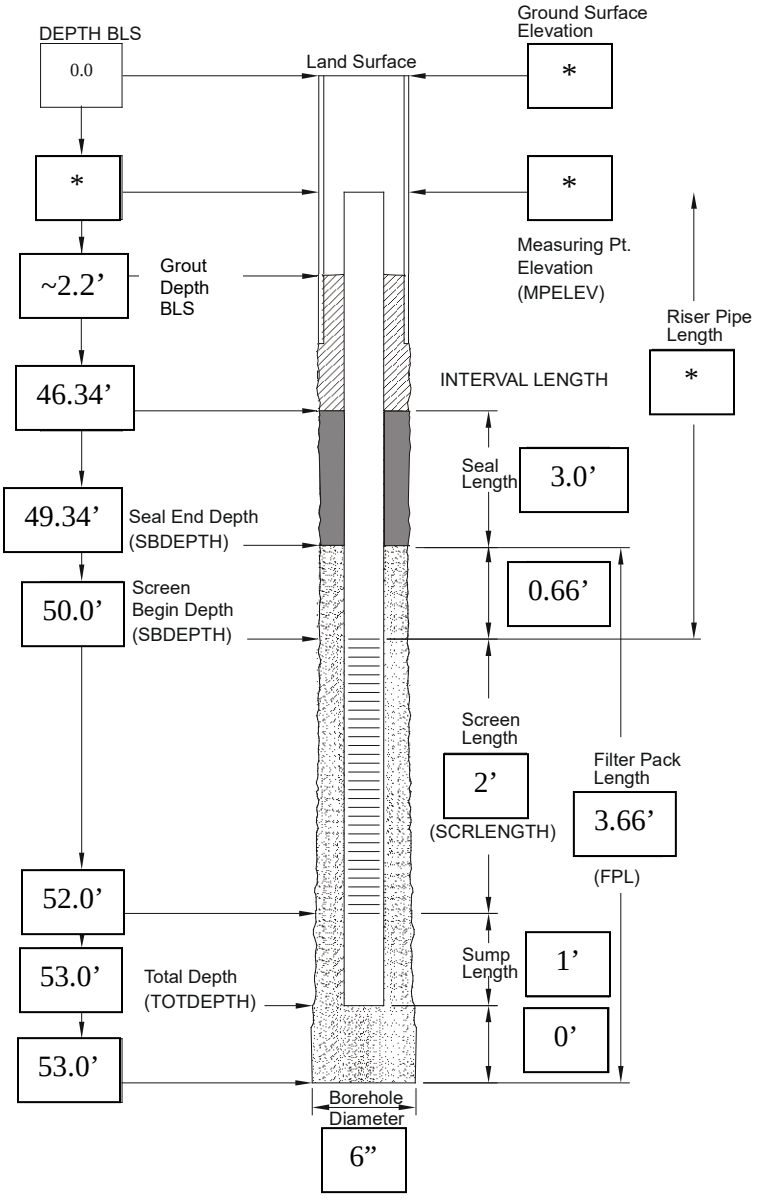
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW212
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/14/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

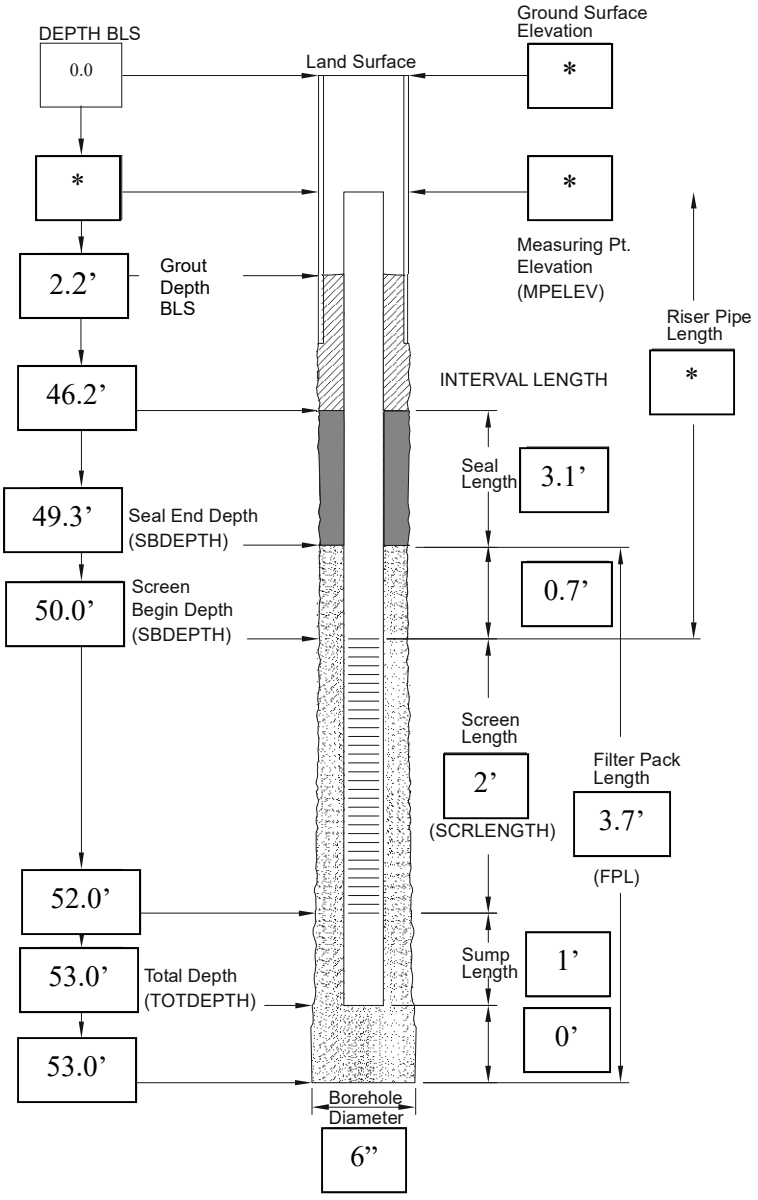
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW213
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
*To be completed by FECC

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/17/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

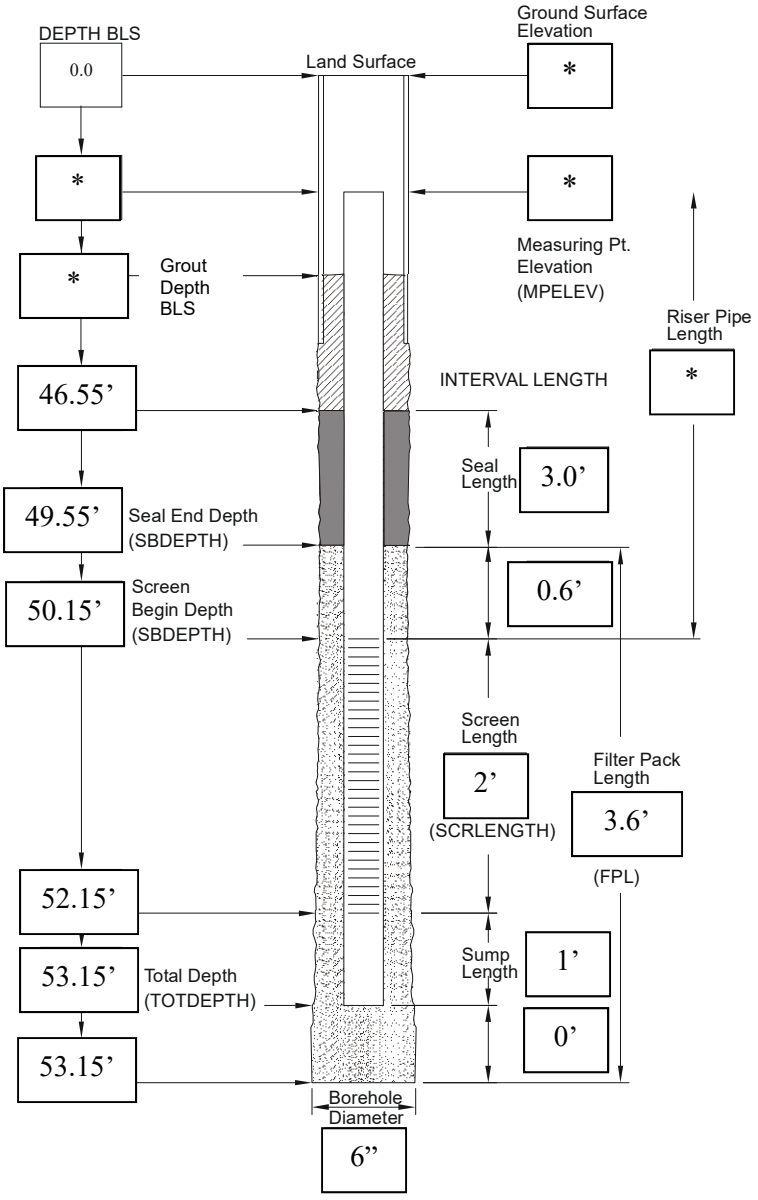
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW214
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/10/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/10/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

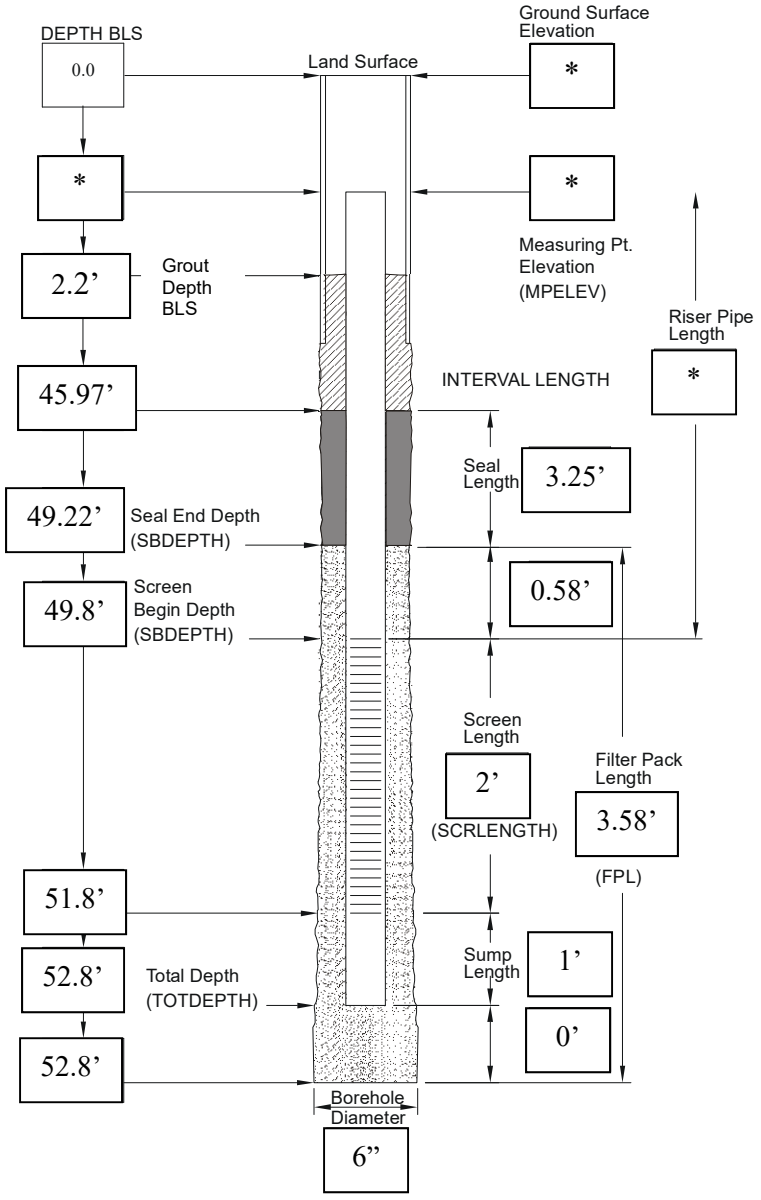
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW215
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/15/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

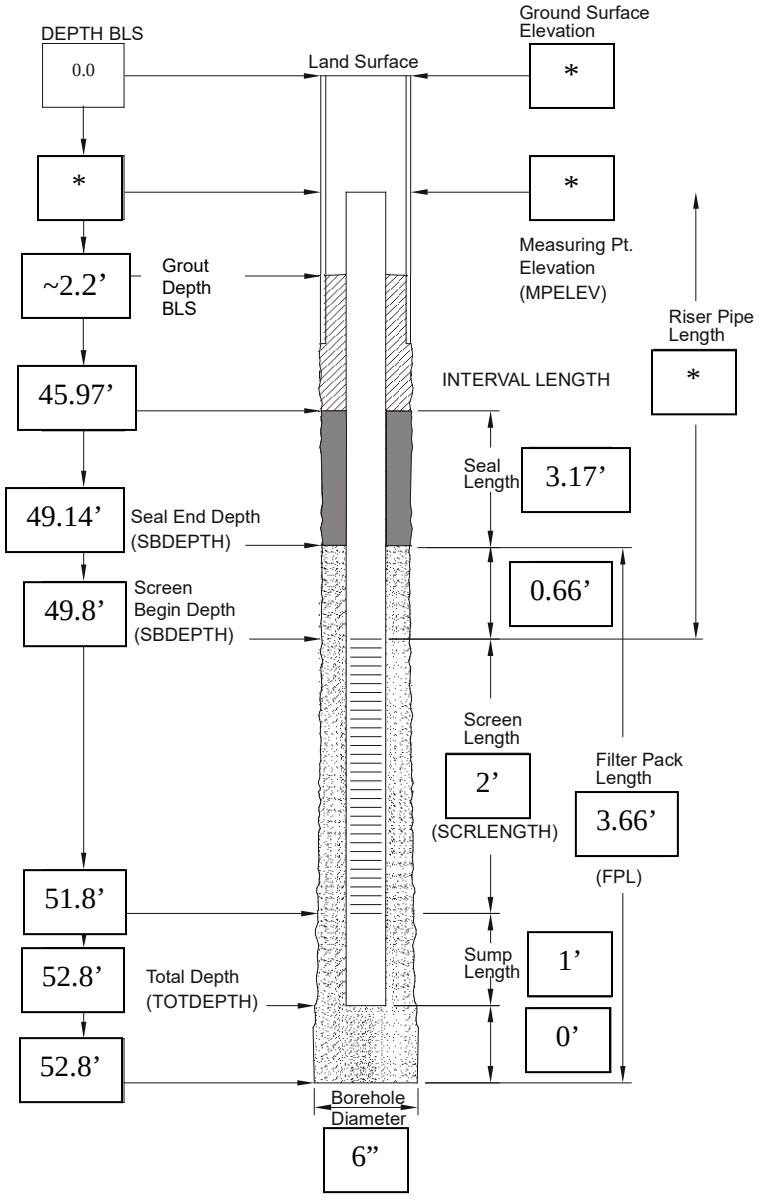
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW216
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*Well to be completed by FECC and surveyed

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/15/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

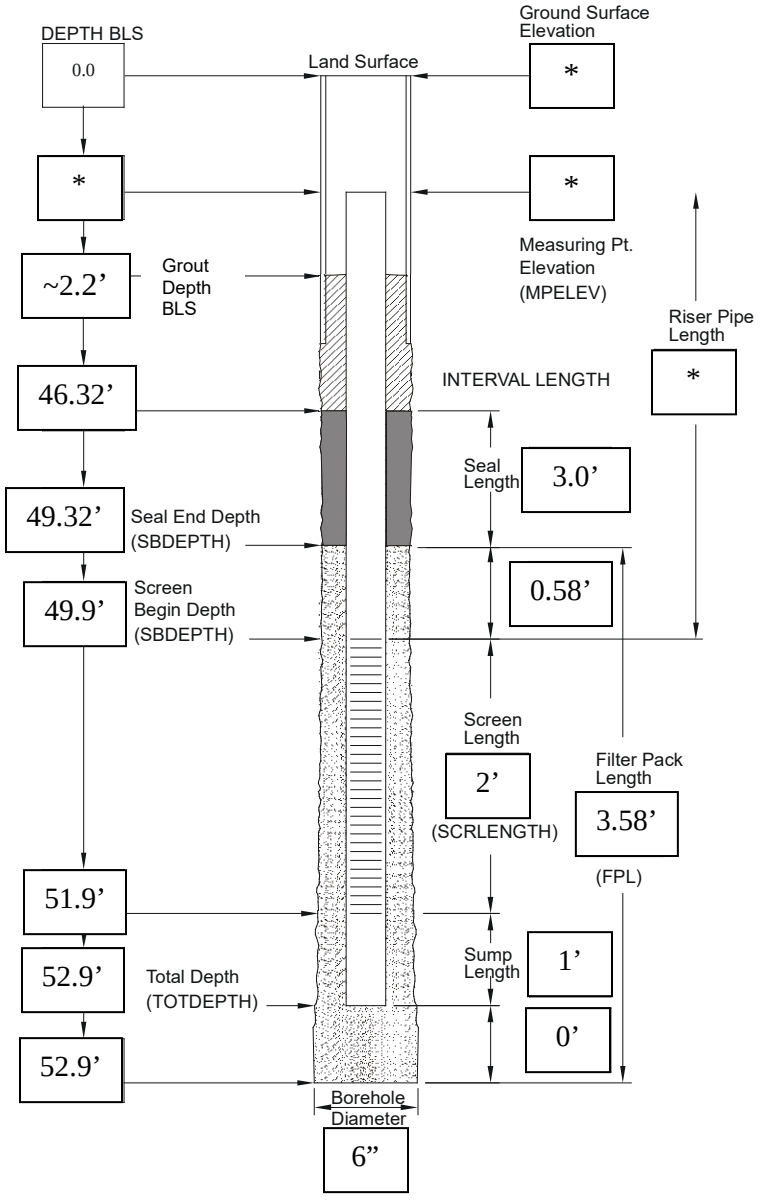
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW217
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave, Gamma
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*Well to be completed by FECC and surveyed

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/14/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

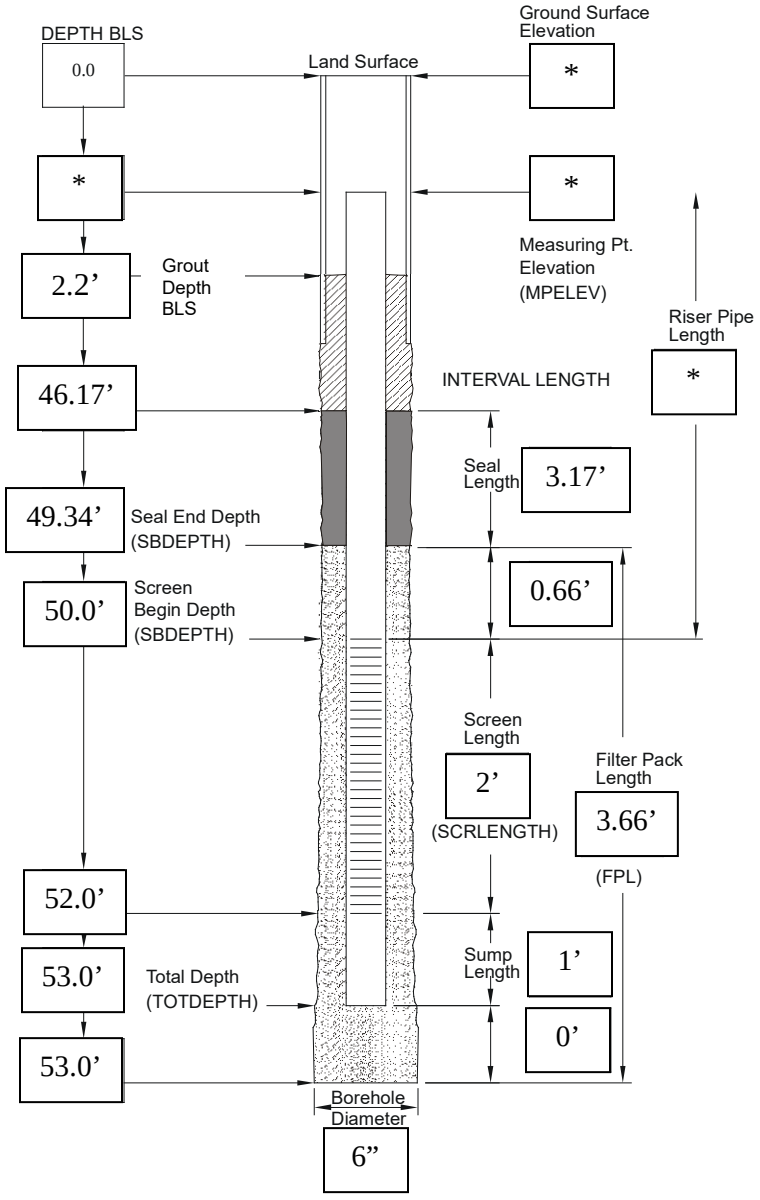
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW218
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave, Gamma
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/14/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

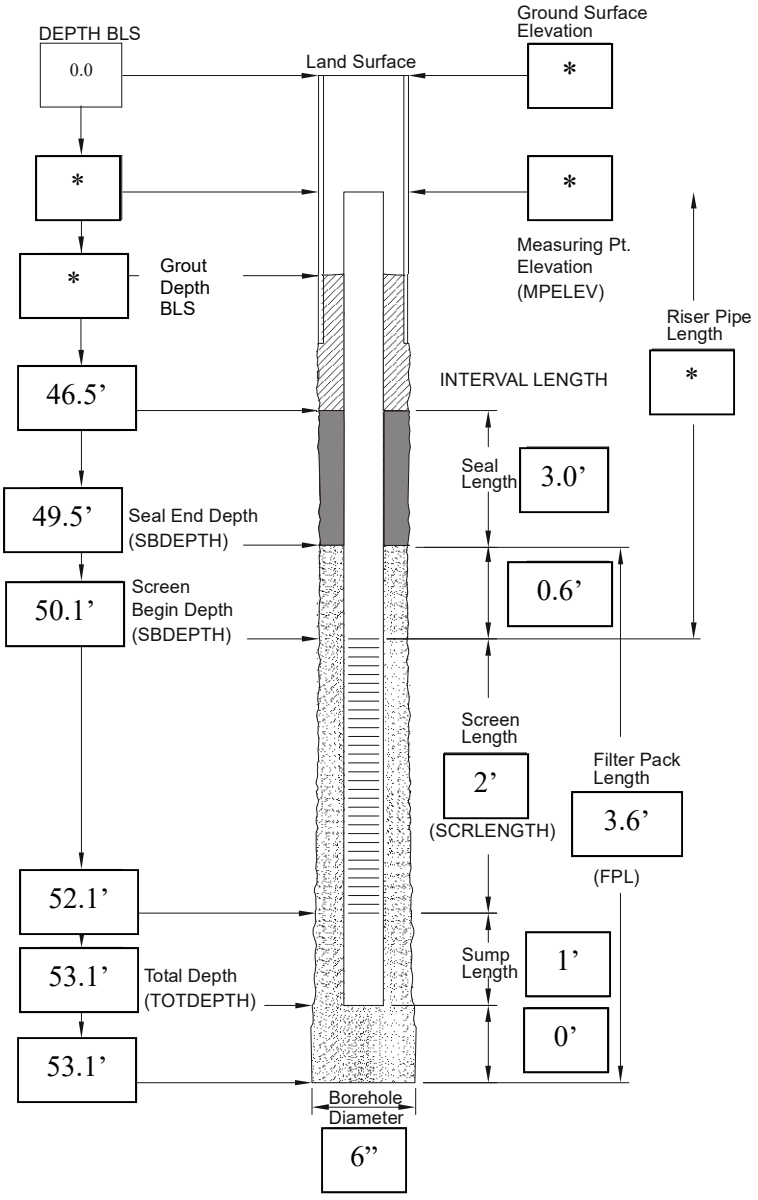
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW219
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: A. Johnson
Signature: A. Johnson

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/10/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/10/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Direct pour through tooling
Vol. Fluid Added: 0
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Direct pour through tooling
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Completion at later date will be included in CCR

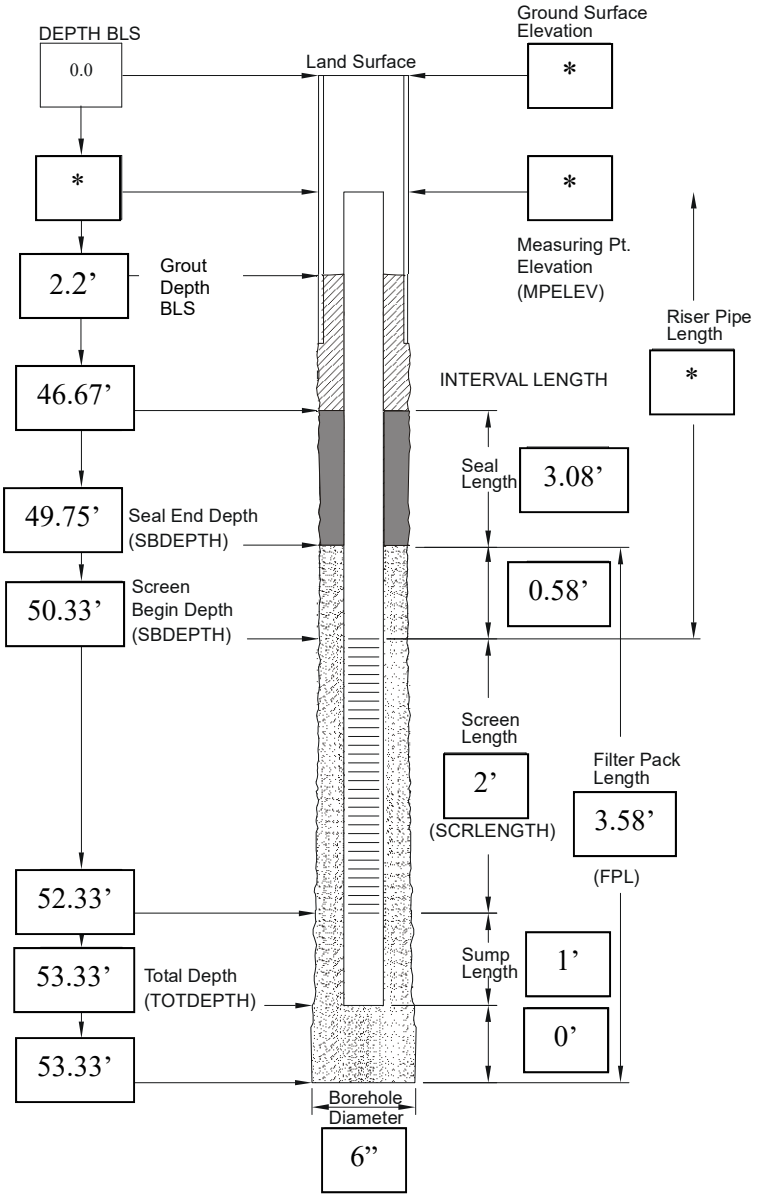
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW220
Drilling Company: Groundwater Protection
Drillers: Groundwater Protection
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/13/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/13/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

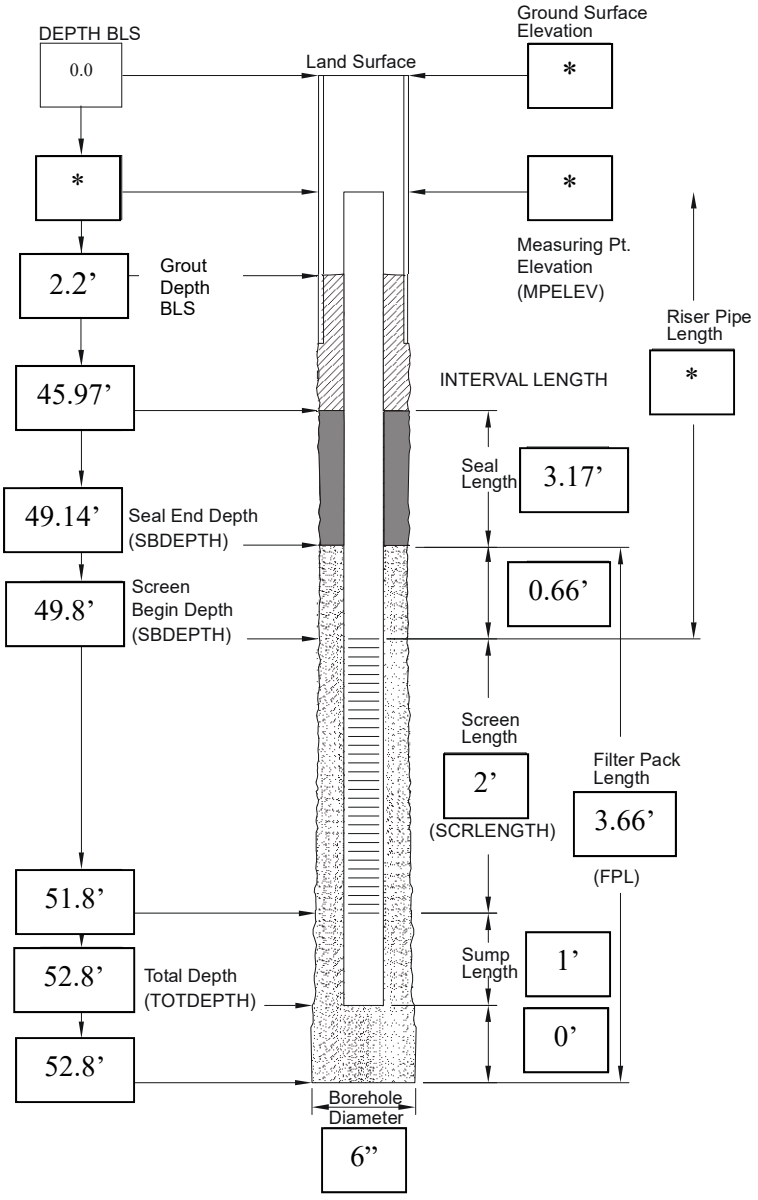
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW221
Drilling Company: Groundwater Protection
Drillers: Thomas and Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/15/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/15/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

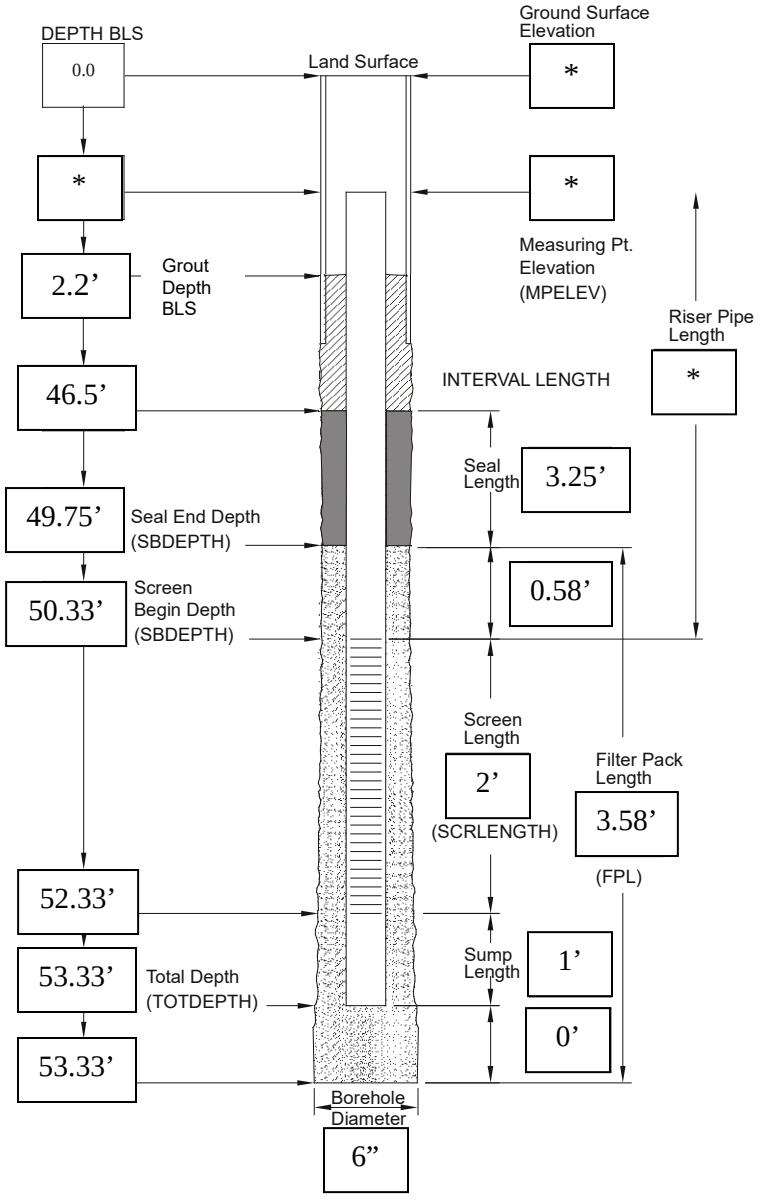
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW222
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/14/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

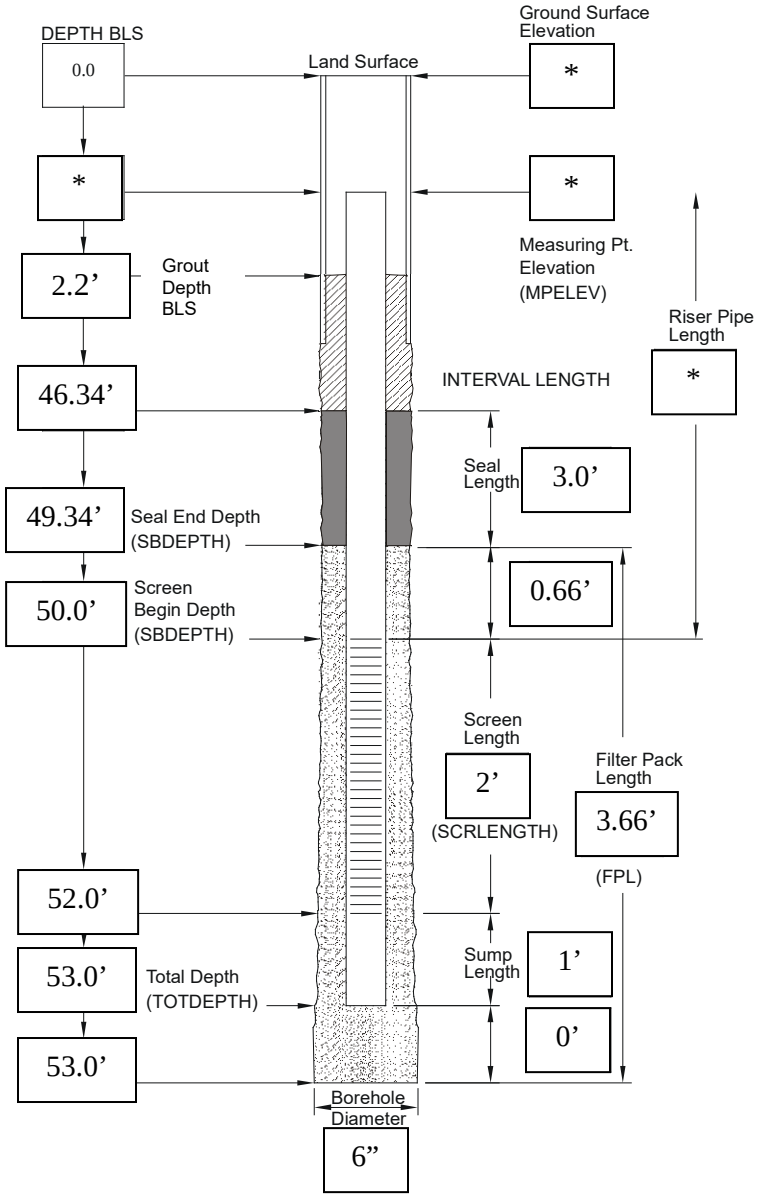
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW223
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/14/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/14/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

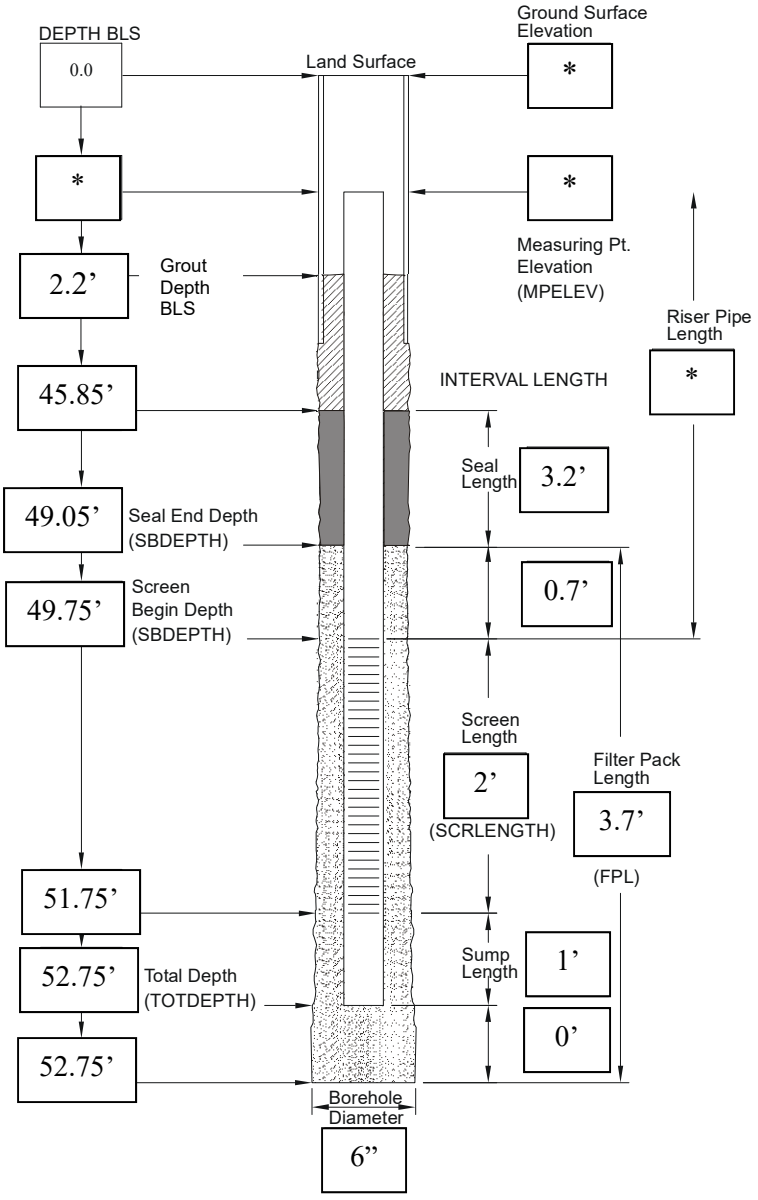
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW224
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/17/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

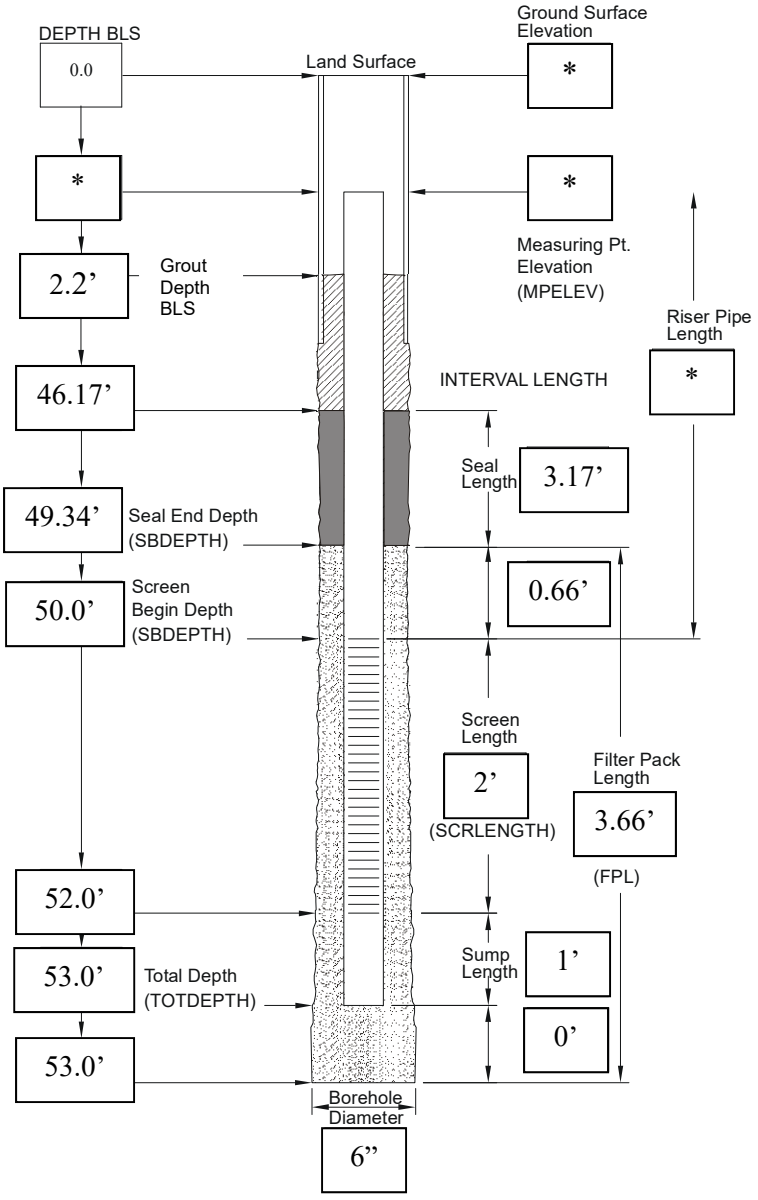
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW225
Drilling Company: Groundwater Protection
Drillers: Groundwater Protection Inc.
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/13/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/13/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

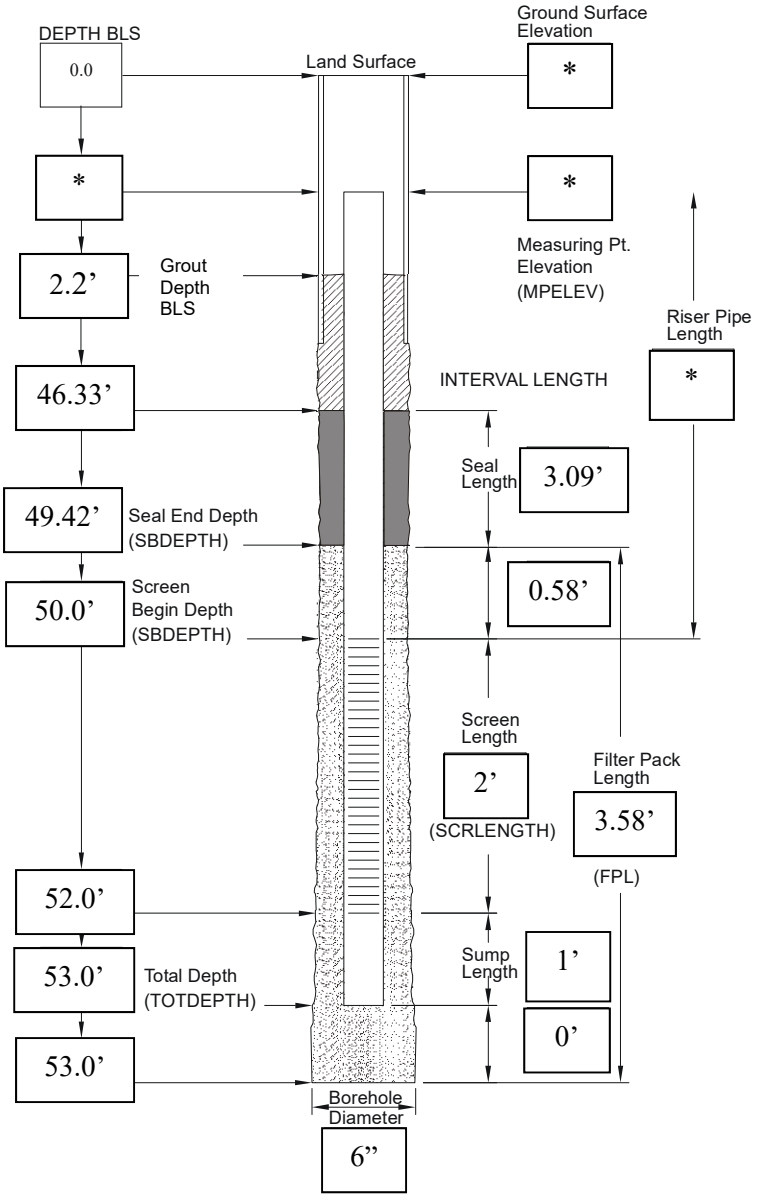
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW226
Drilling Company: Groundwater Protection
Drillers: Dave and Thomas
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/13/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/13/17
Type: Bentonite pellets
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to conduct well completion at later date, well not yet surveyed

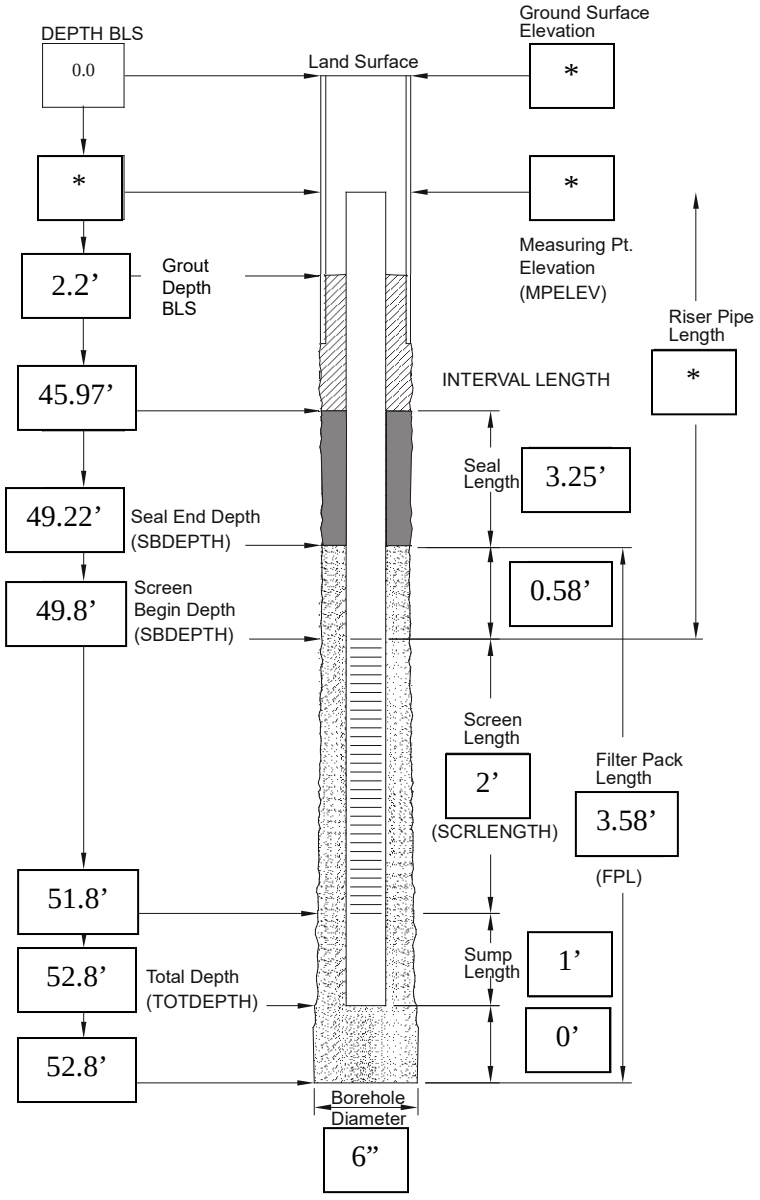
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW227
Drilling Company: Groundwater Protection
Drillers: Thomas, Dave, Gamma
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 2/16/17
Type: Bentonite pellets (3/8")
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Well to be completed by FECC and surveyed

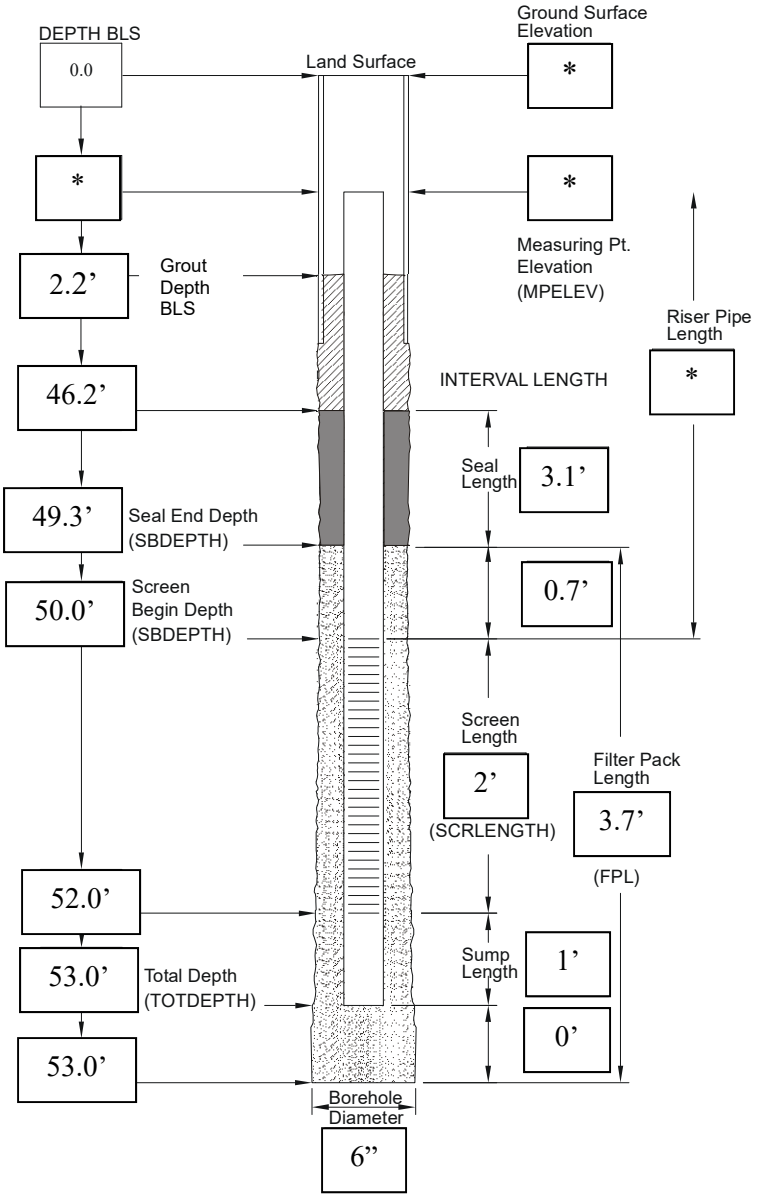
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW228
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/17/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

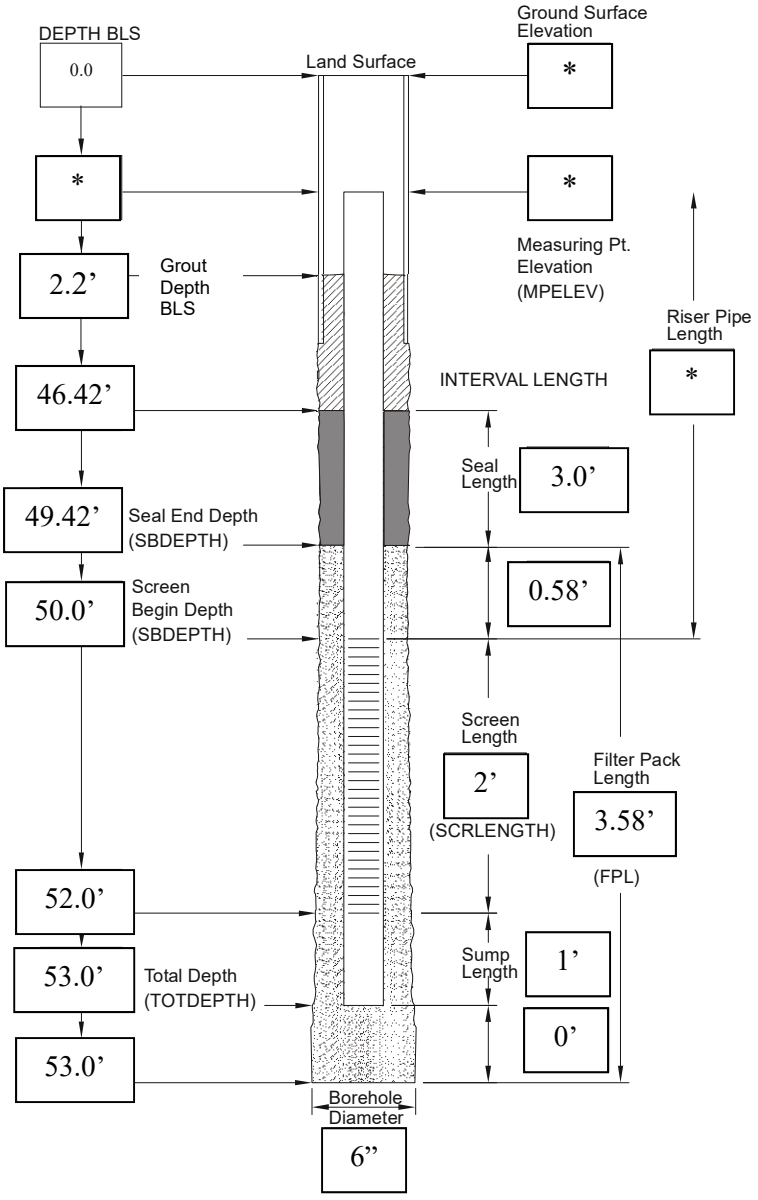
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW229
Drilling Company: Groundwater Protection
Drillers: Dave and Thomas
Geologist/Engineer: Jake Crum
Signature: Jake Crum

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/13/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/13/17
Type: Bentonite pellets
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap (Y / (N))
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug ((Y) / N)
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to conduct well completion at later date, well not yet surveyed

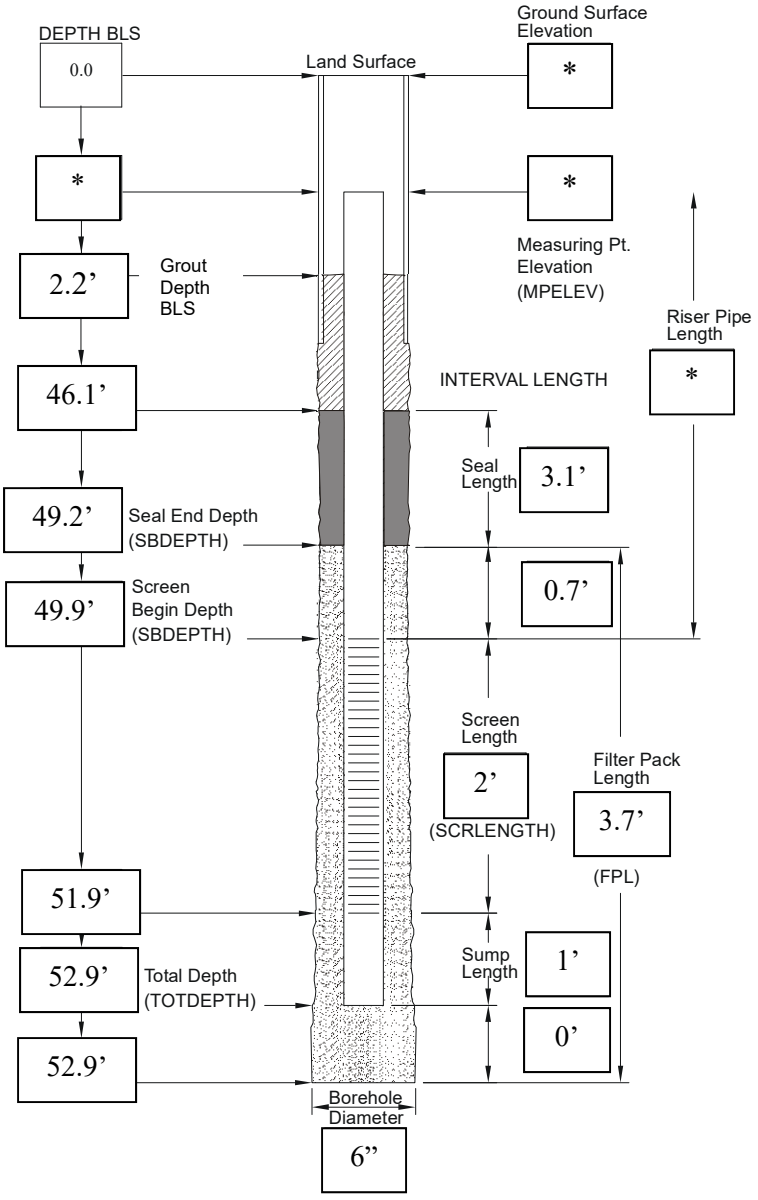
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW230
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
*To be completed by FECC

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/16/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

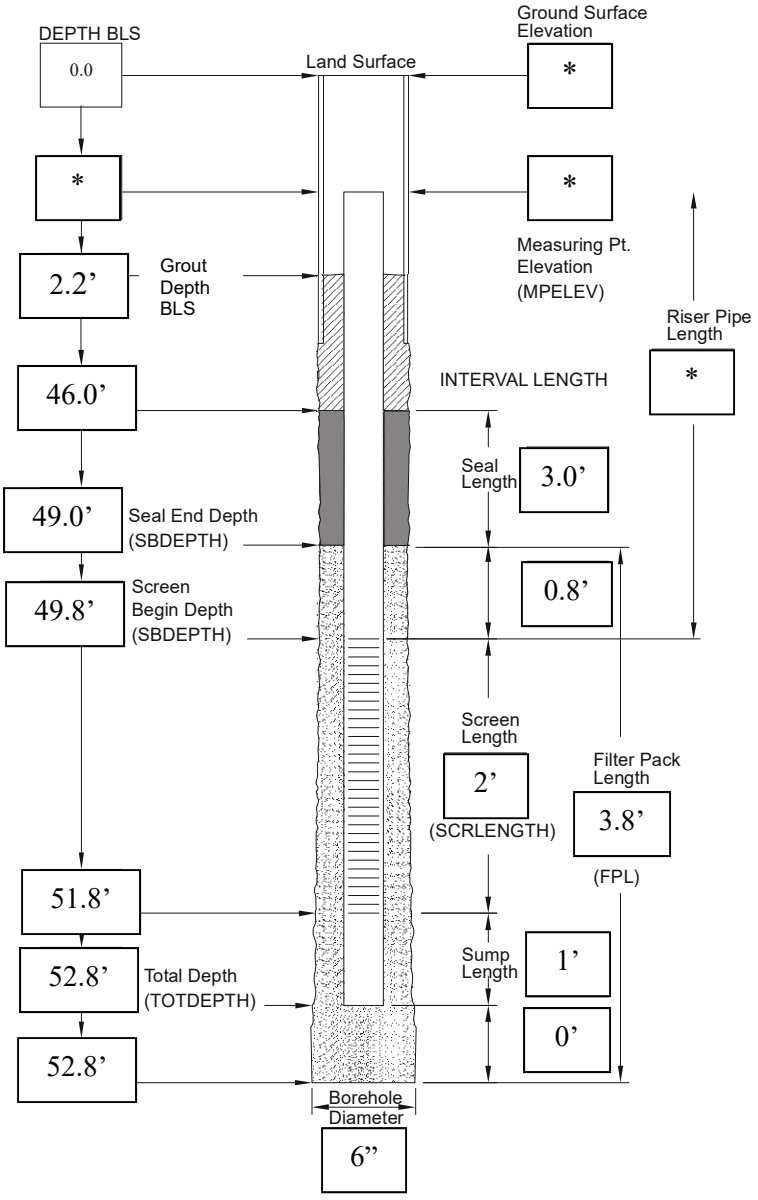
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW231
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/16/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

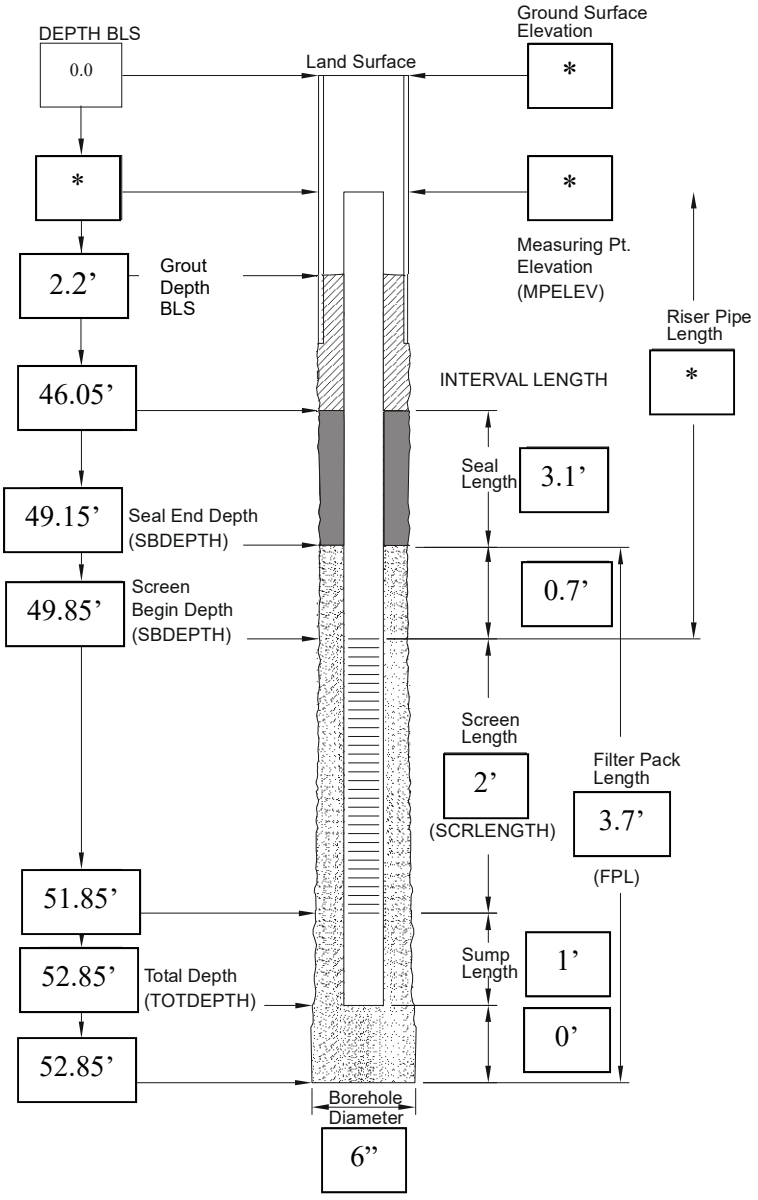
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW232
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/16/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Comments
*To be completed by FECC

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/16/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

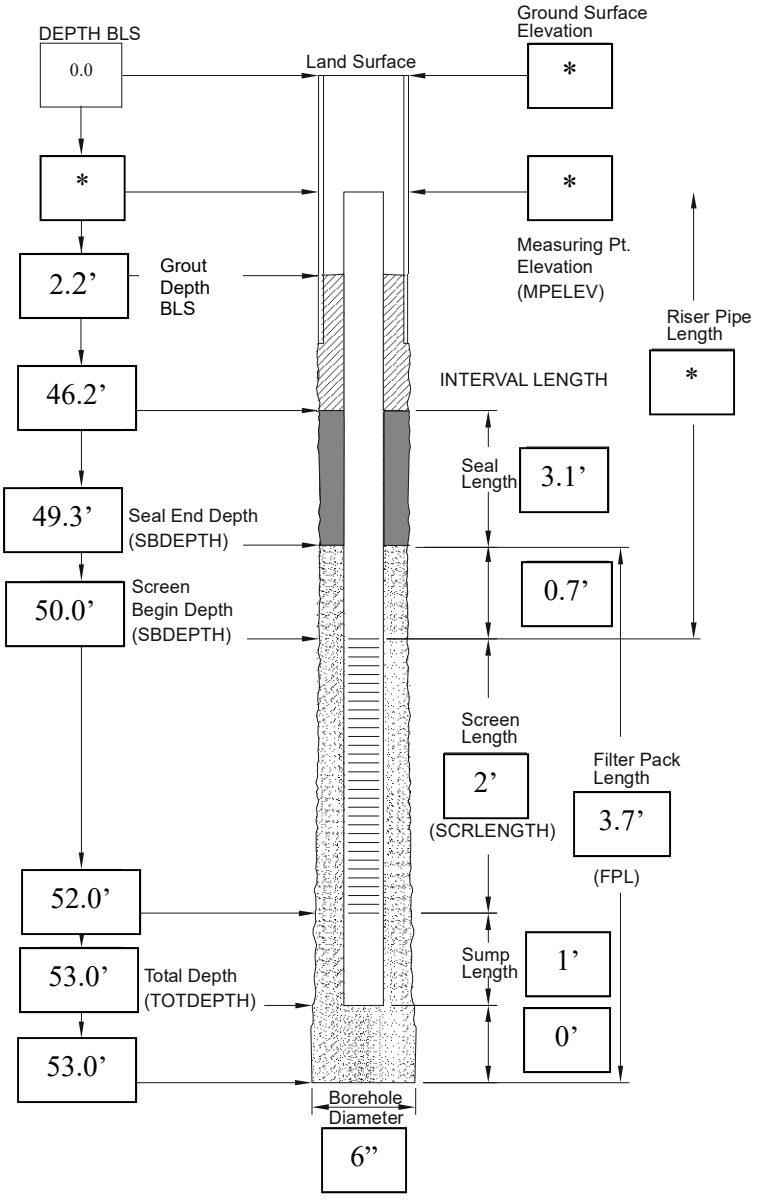
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW228
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: Ben Coppenger
Signature: Ben Coppenger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 2/17/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 2/17/17
Type: Bentonite pellets (coated 3/8")
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be completed by FECC

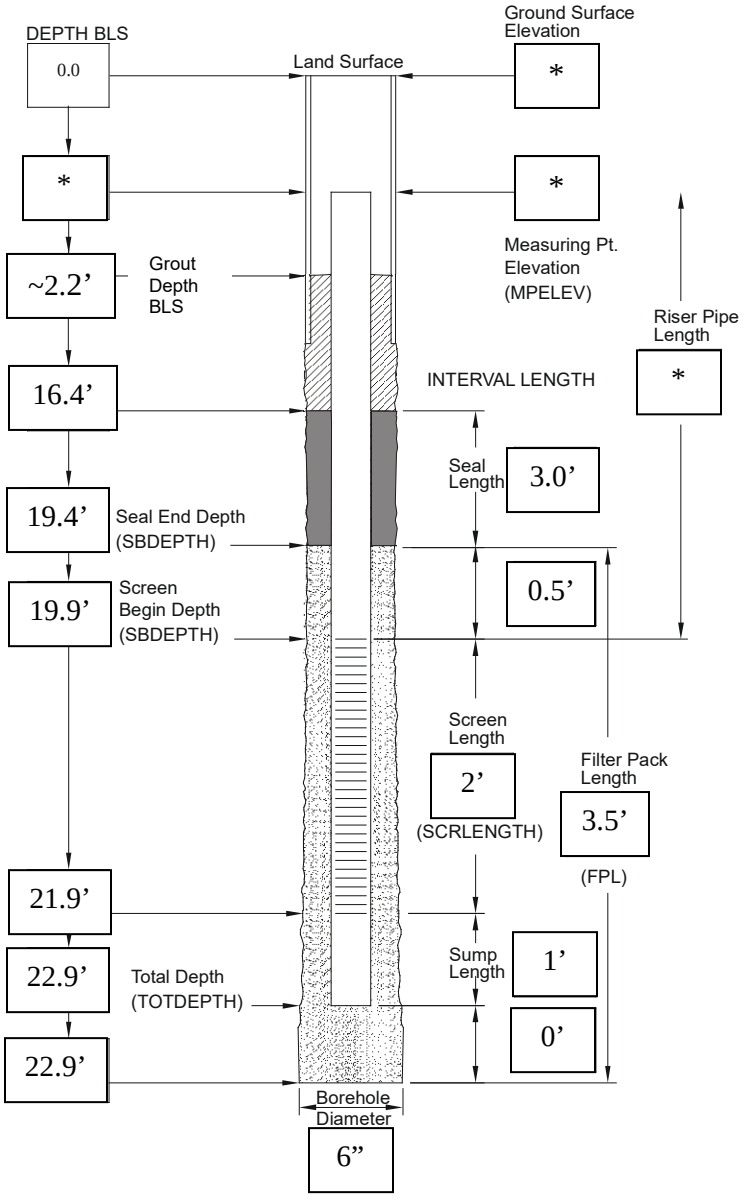
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW234
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/18/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/18/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

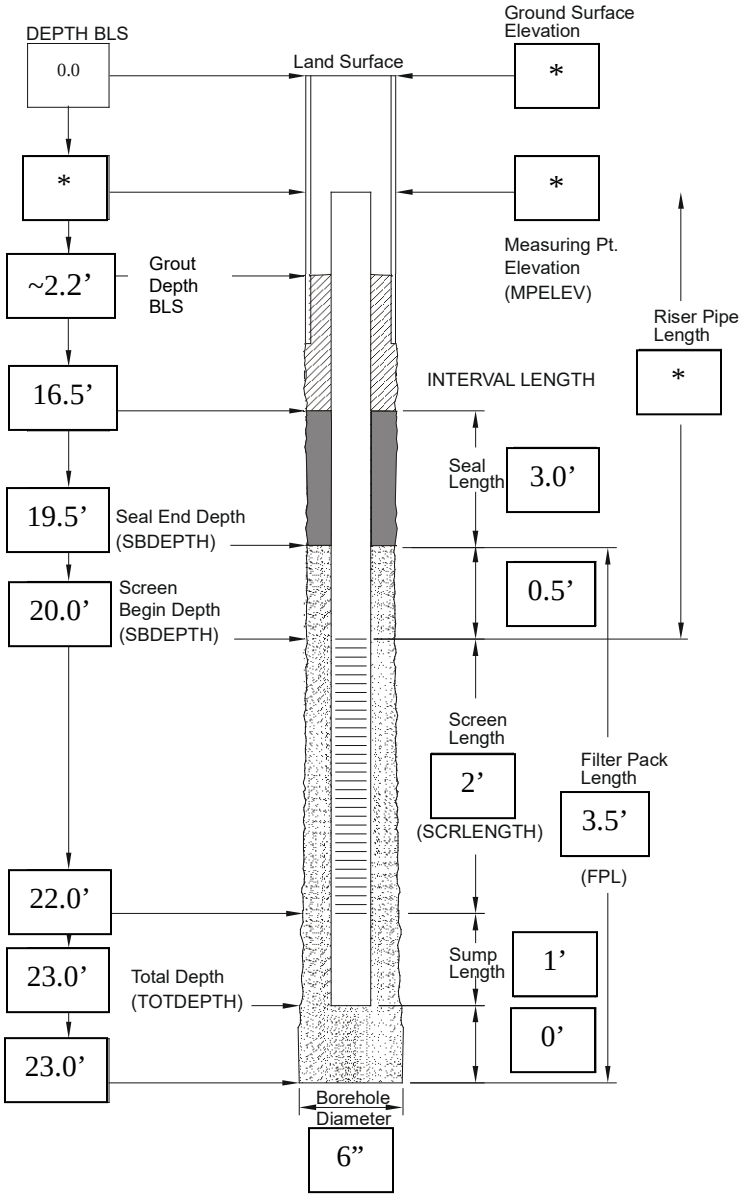
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW235
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/18/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/18/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

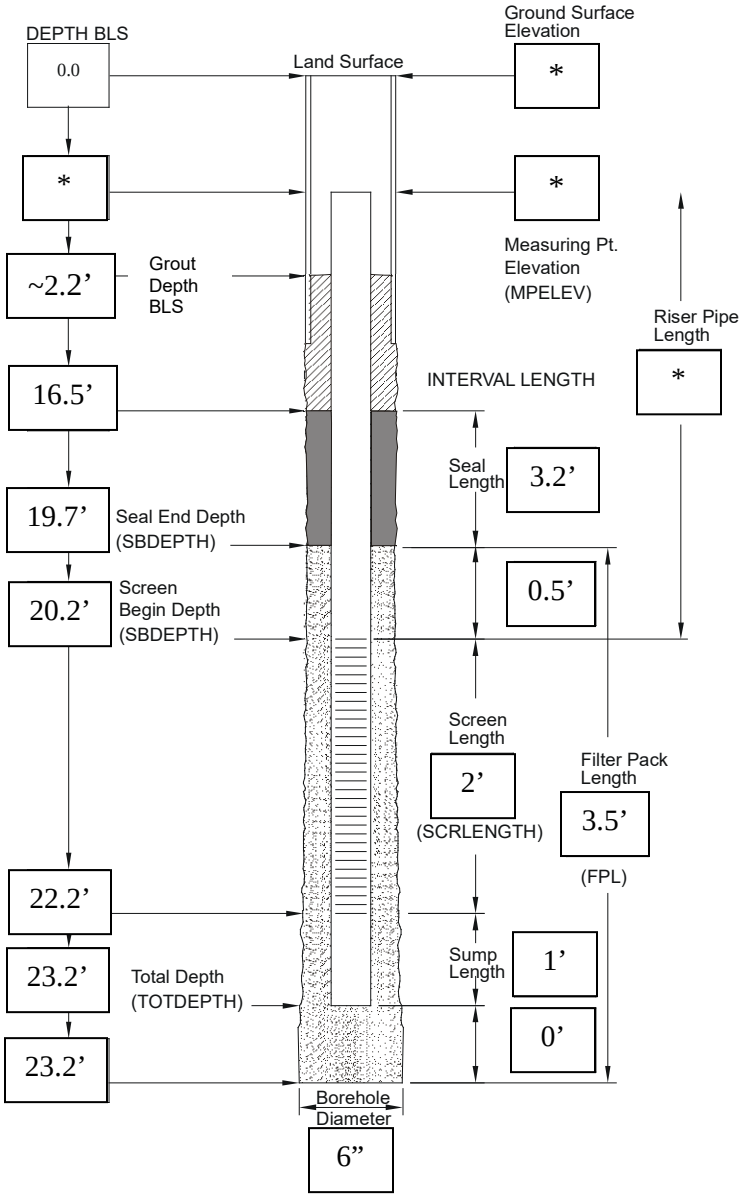
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW236
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/18/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/18/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

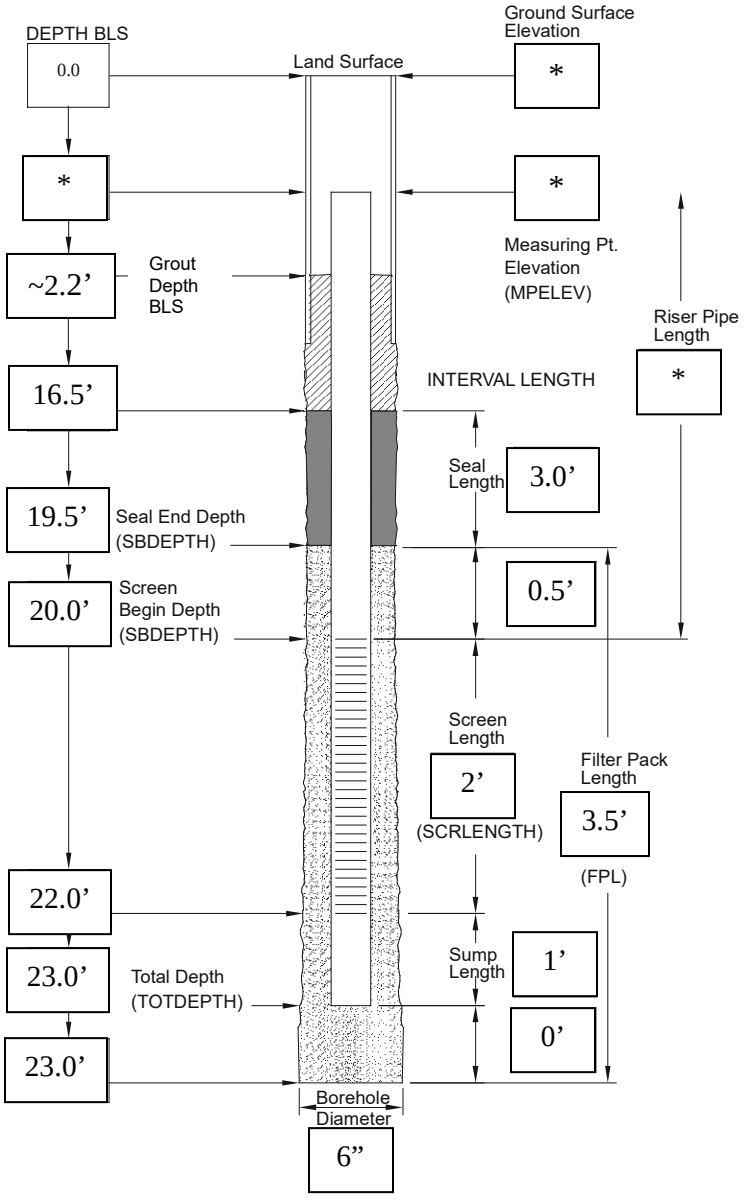
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW237
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/18/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/18/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

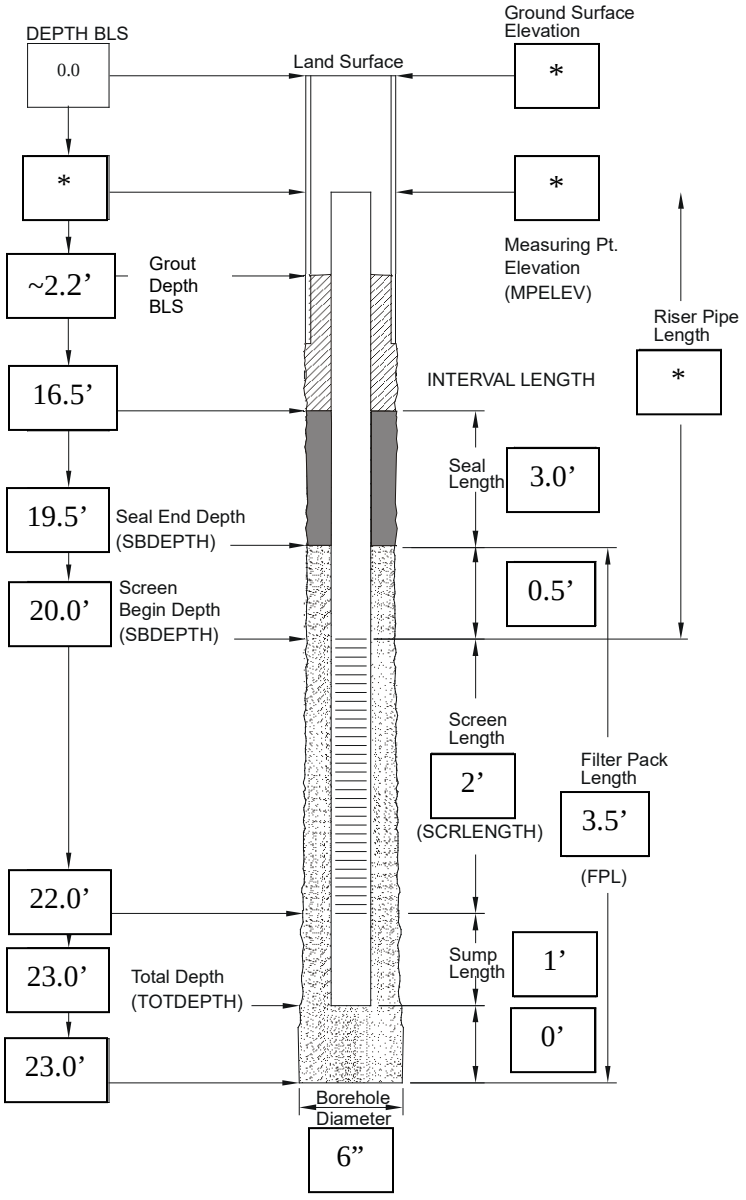
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW238
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/19/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

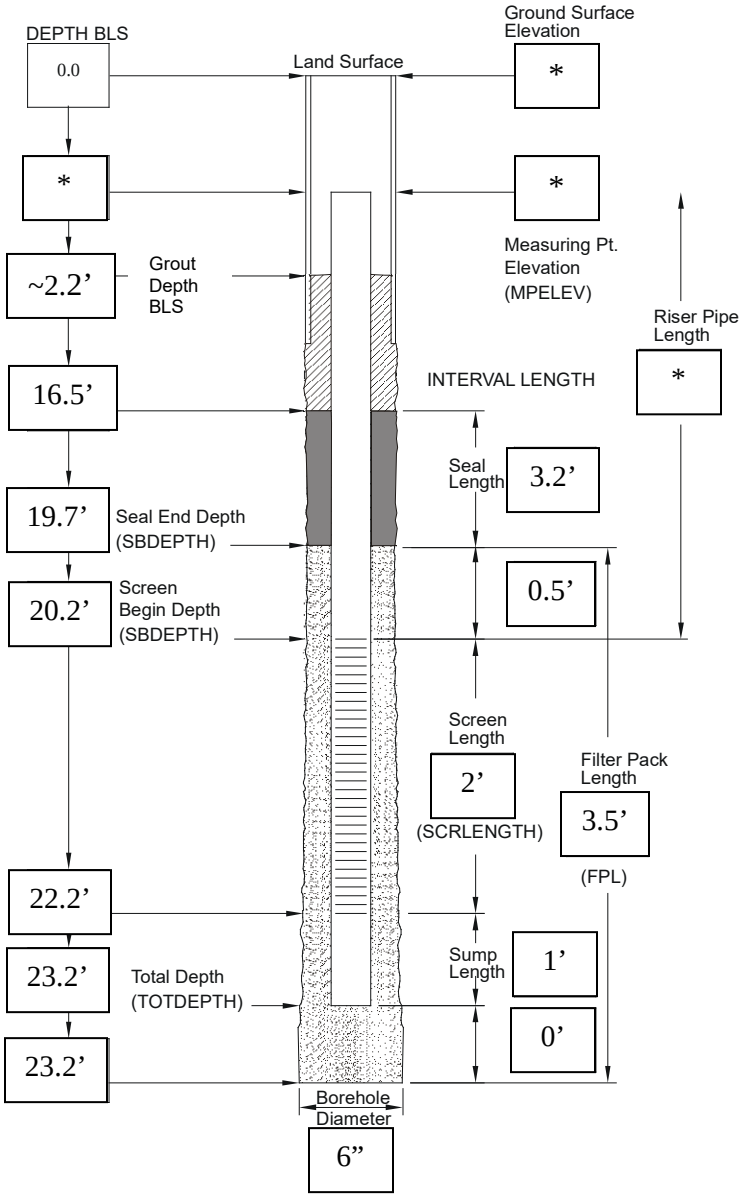
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW239
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/18/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/18/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

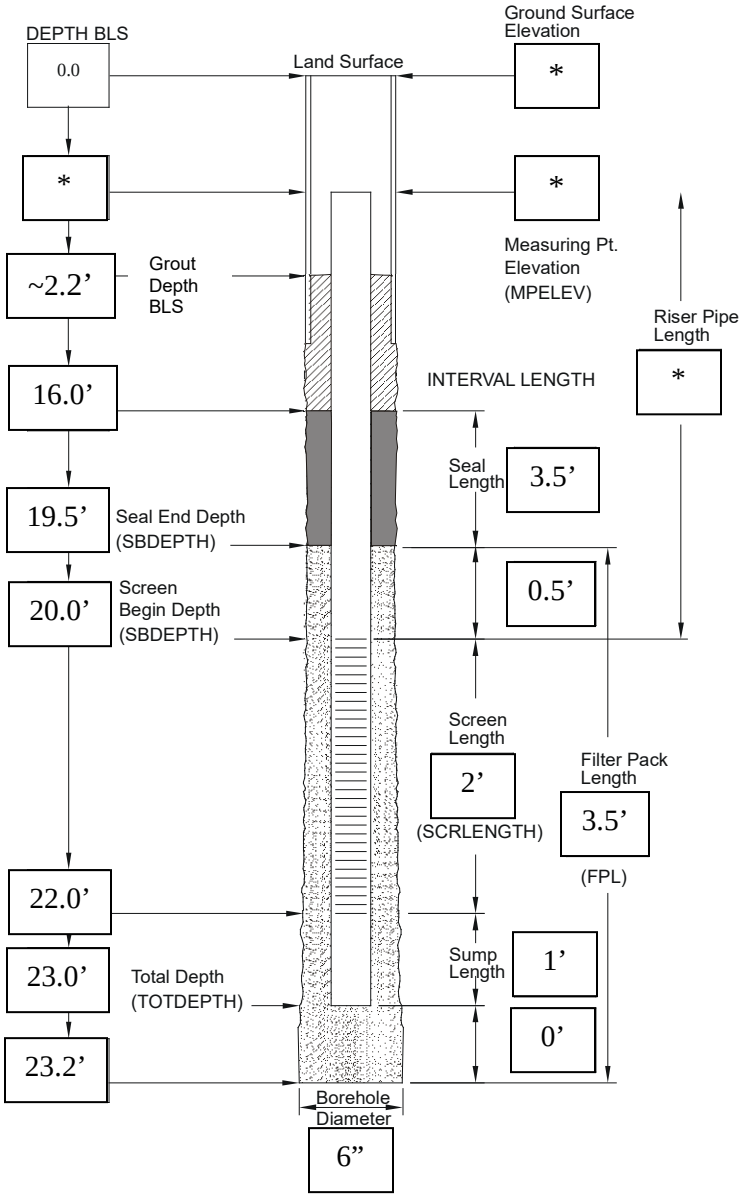
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW240
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/18/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/18/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

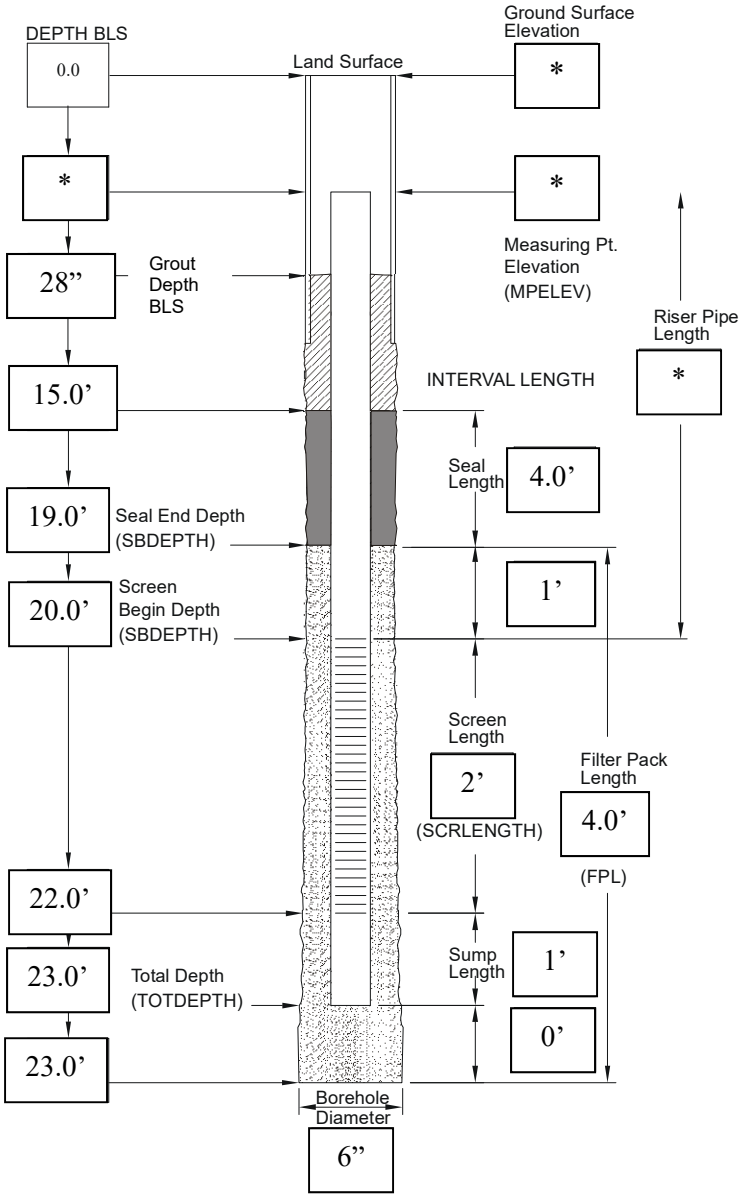
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW241
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/9/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12” Diameter Steel Manhole
Depth BGS: ~6” Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/9/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 65 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*ASW surface completion to be added in CCR
Start at 13:5 hours

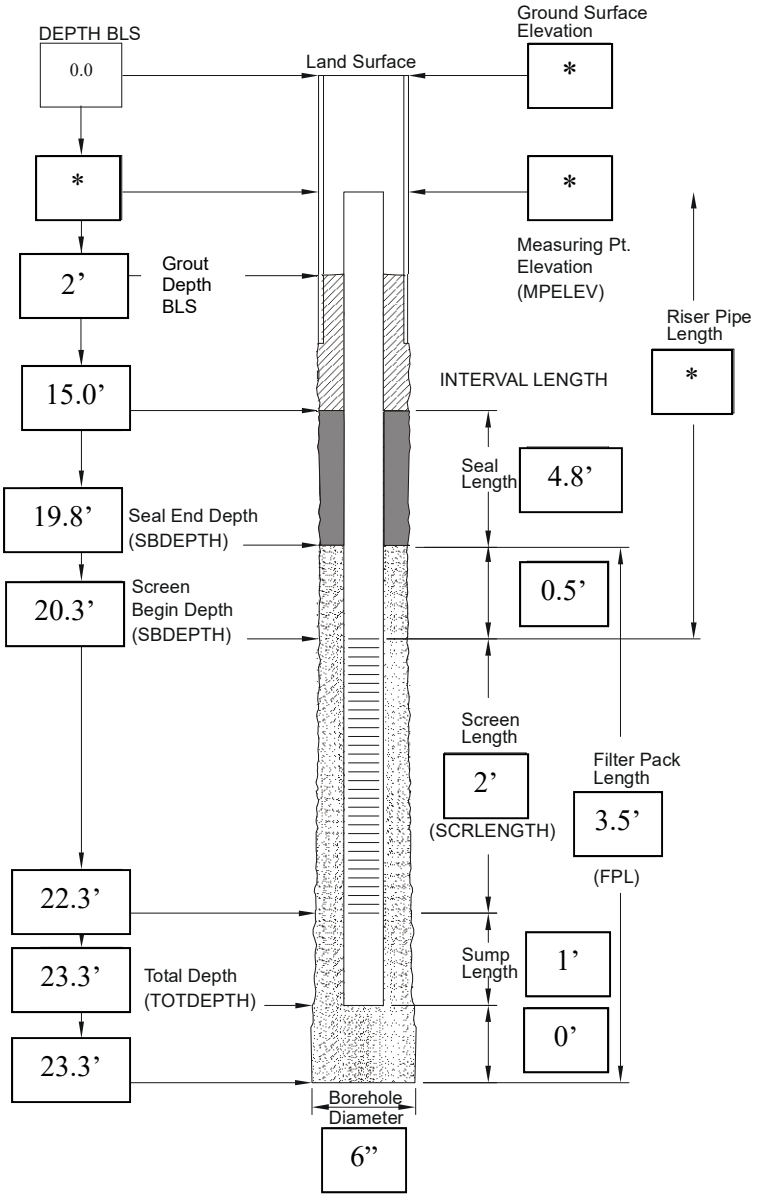
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW242
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/10/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 10:18-
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
DTW: 4.81' Removed 10 gallons for development, final color was brown, no sediment

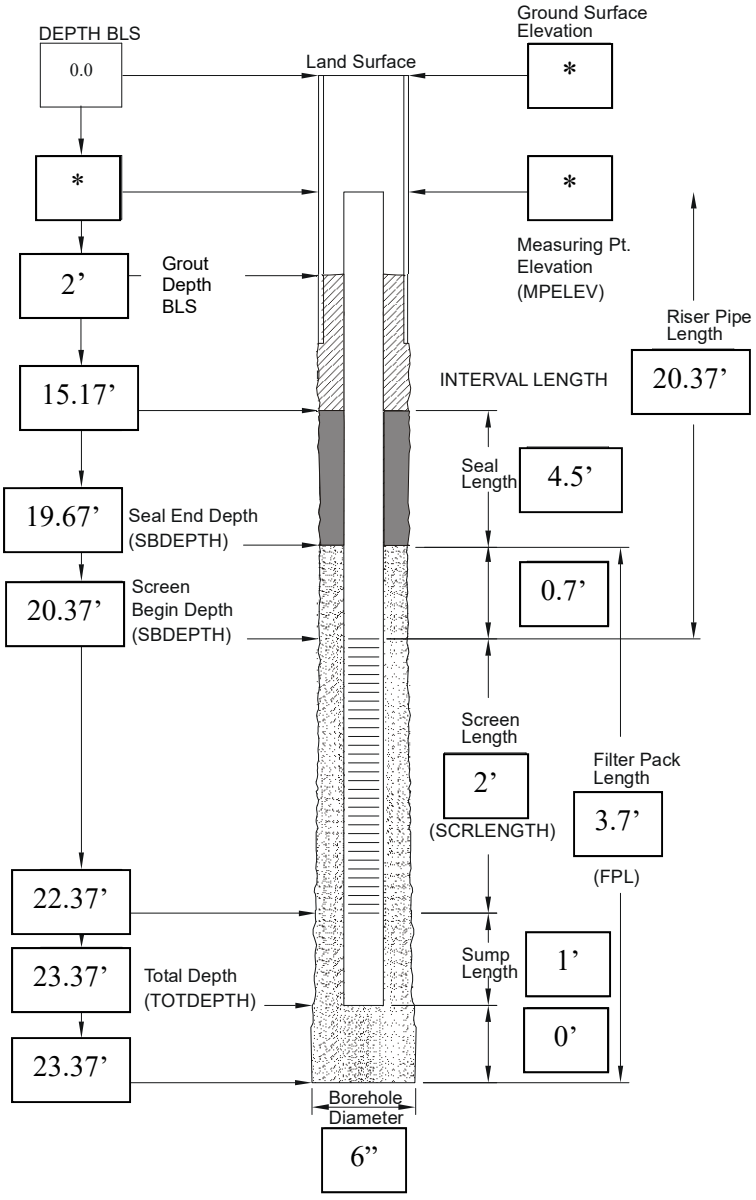
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW243
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/10/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 08:54-09:24 (30 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

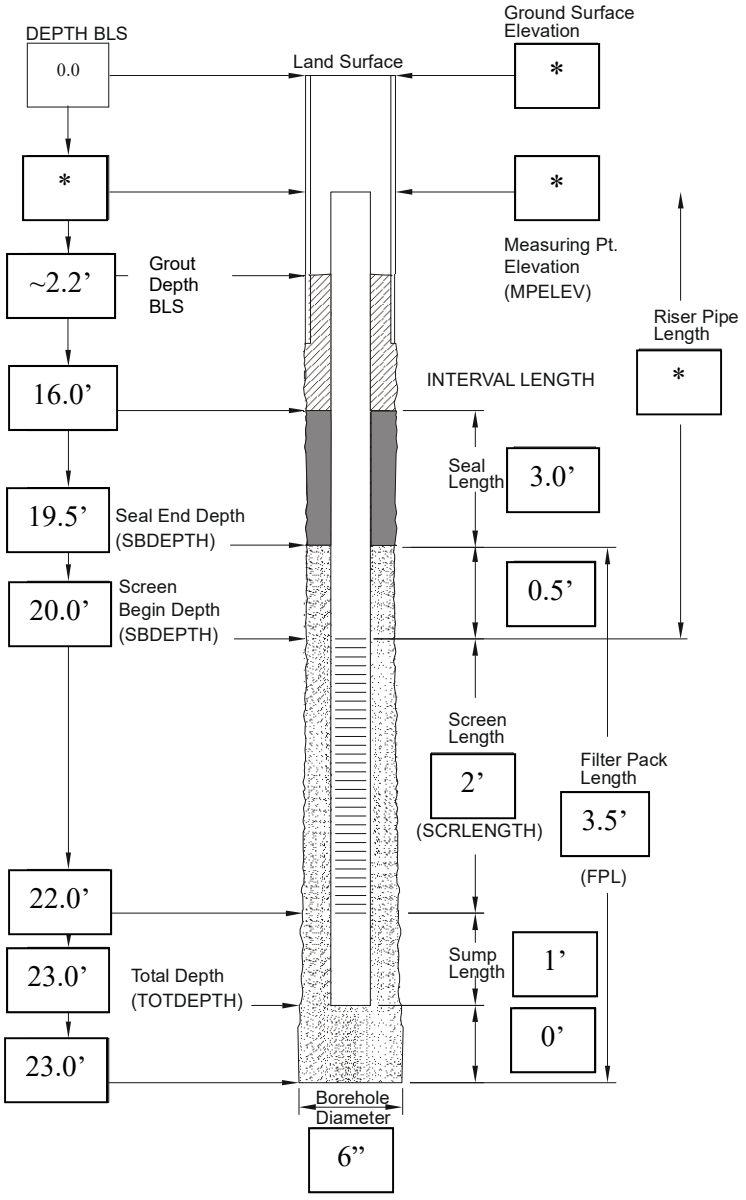
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW244
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/9/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/9/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 65 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*T.O.C. and surface completion detail to be presented in CCR

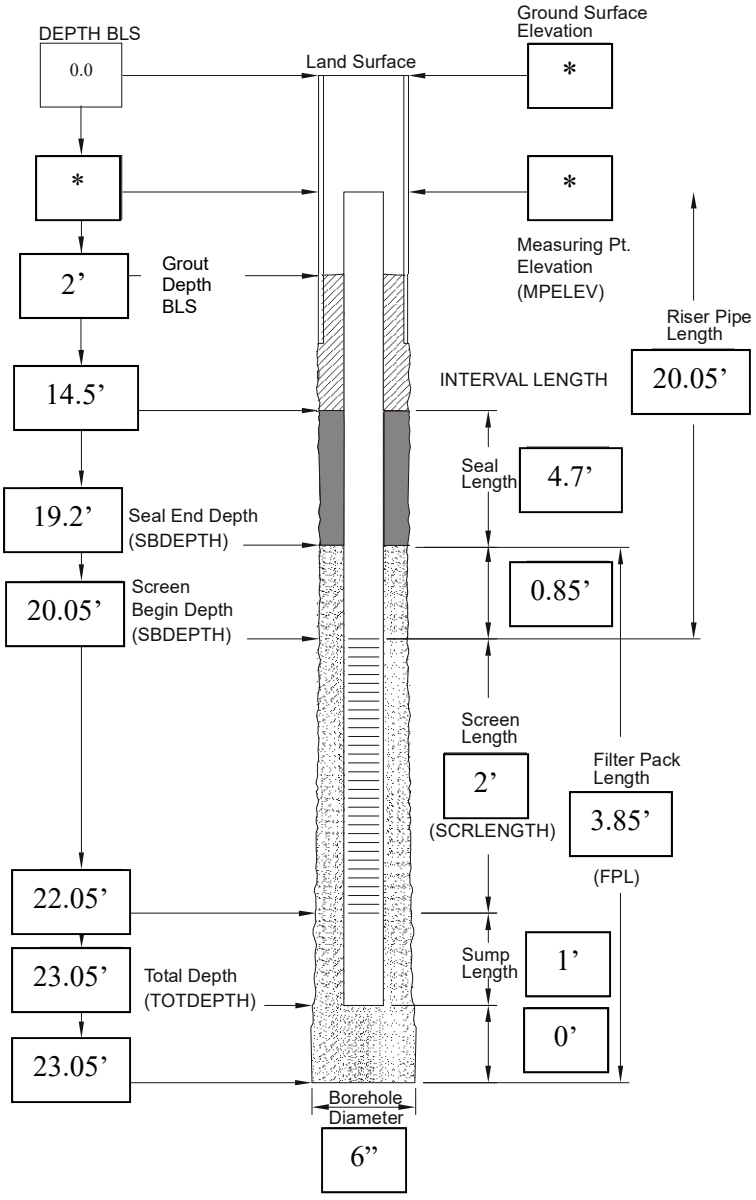
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW245
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/10/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 13:36-14:09 (33 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs
DTW: 3.90', Removed 10 gallons for development, water color was brown

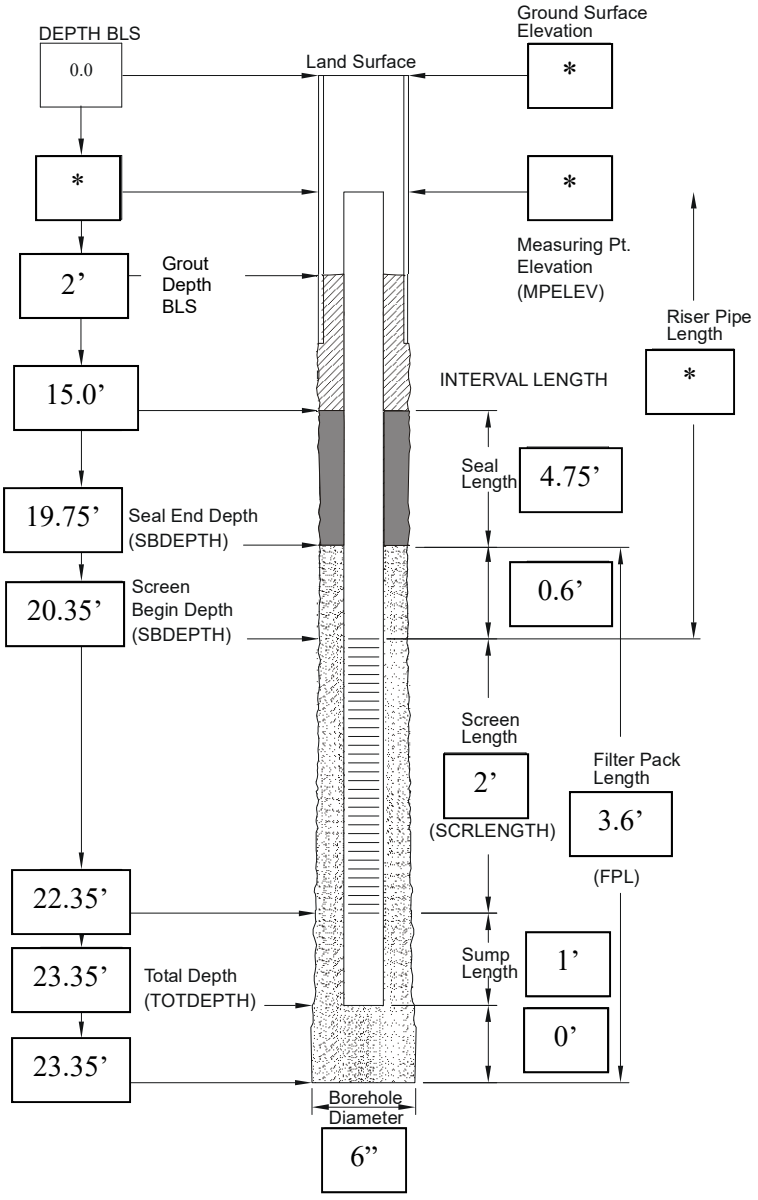
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW246
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/11/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/11/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 12:10-12:45 (35 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

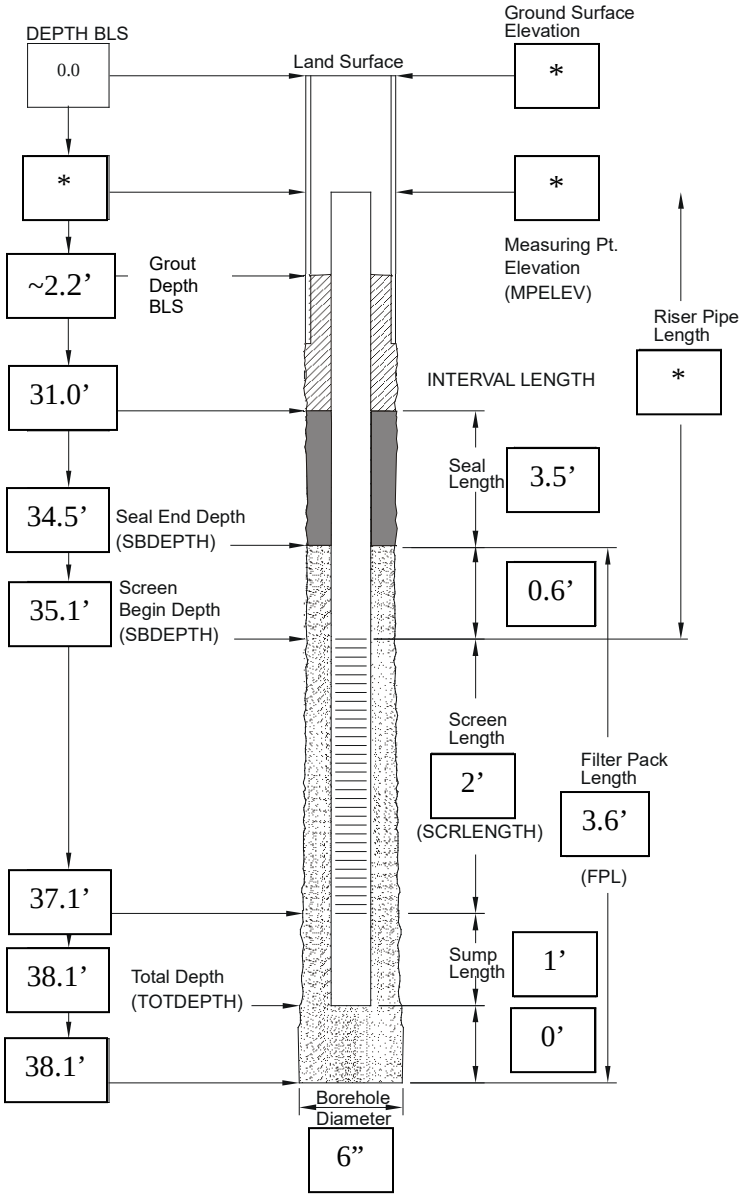
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW247
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/10/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

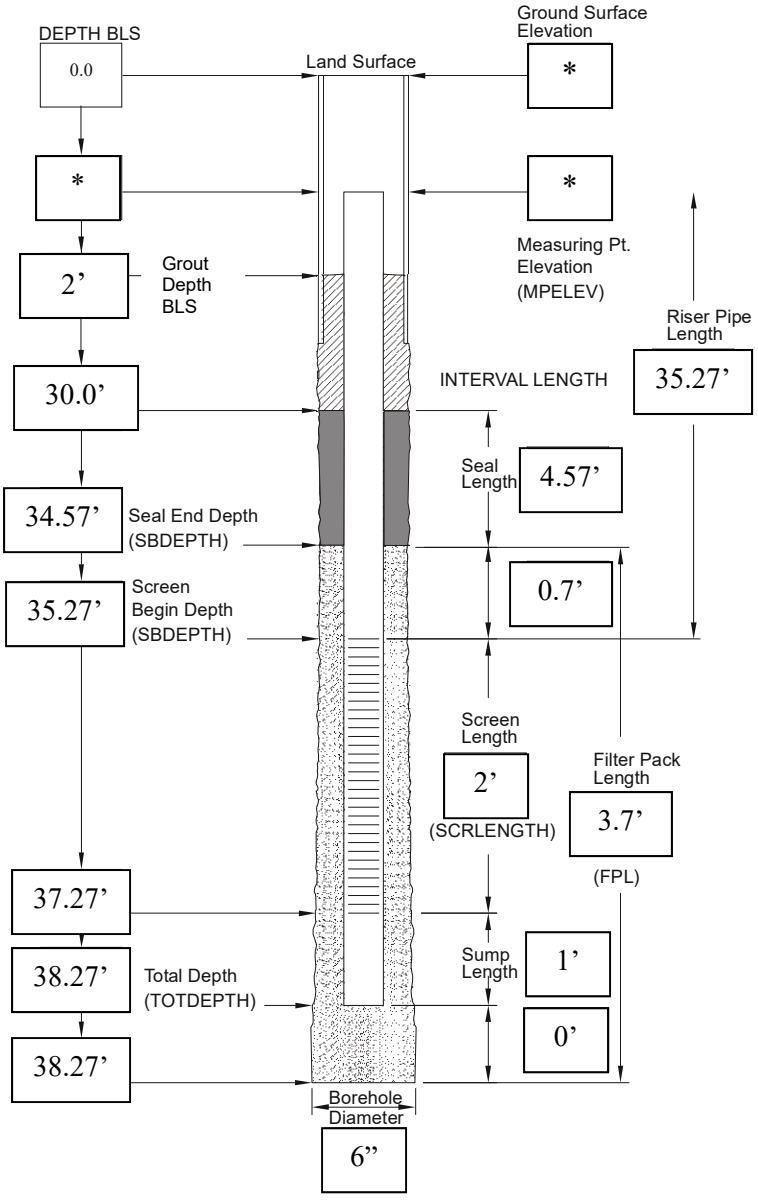
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW248
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/12/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 12:03-13:00 (57 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

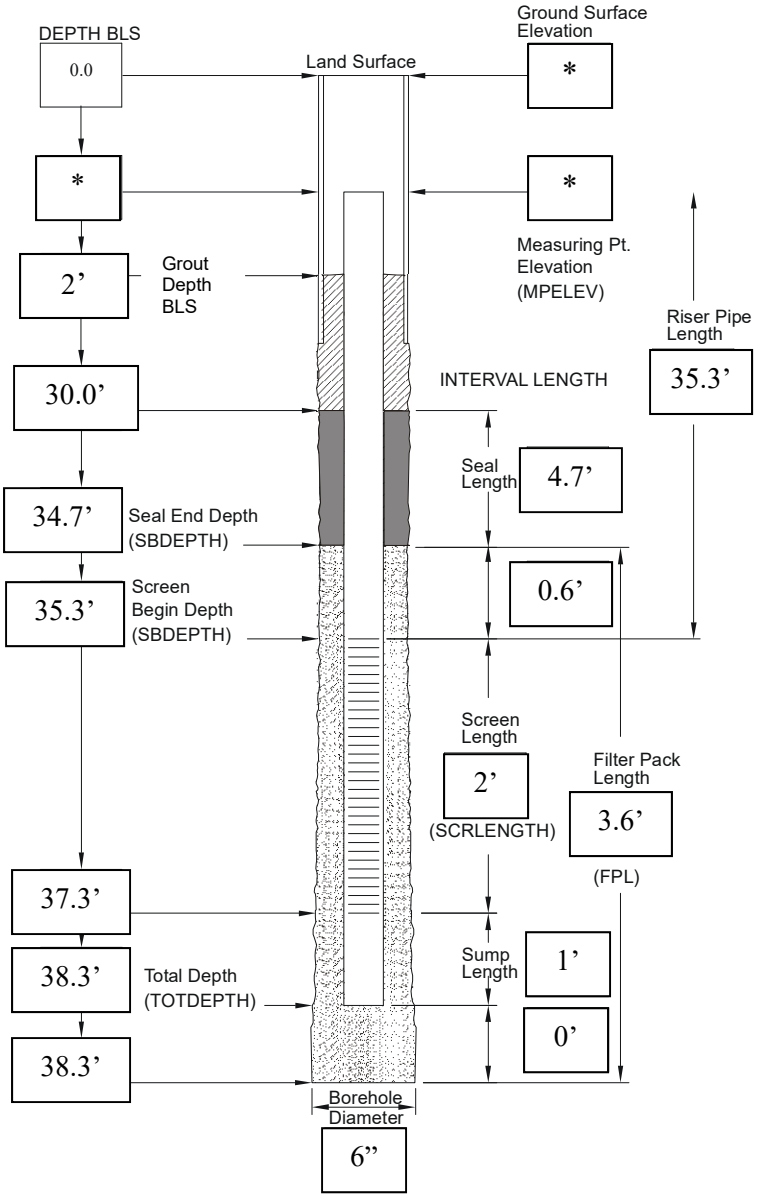
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW249
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/12/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 10:39-11:00 (21 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

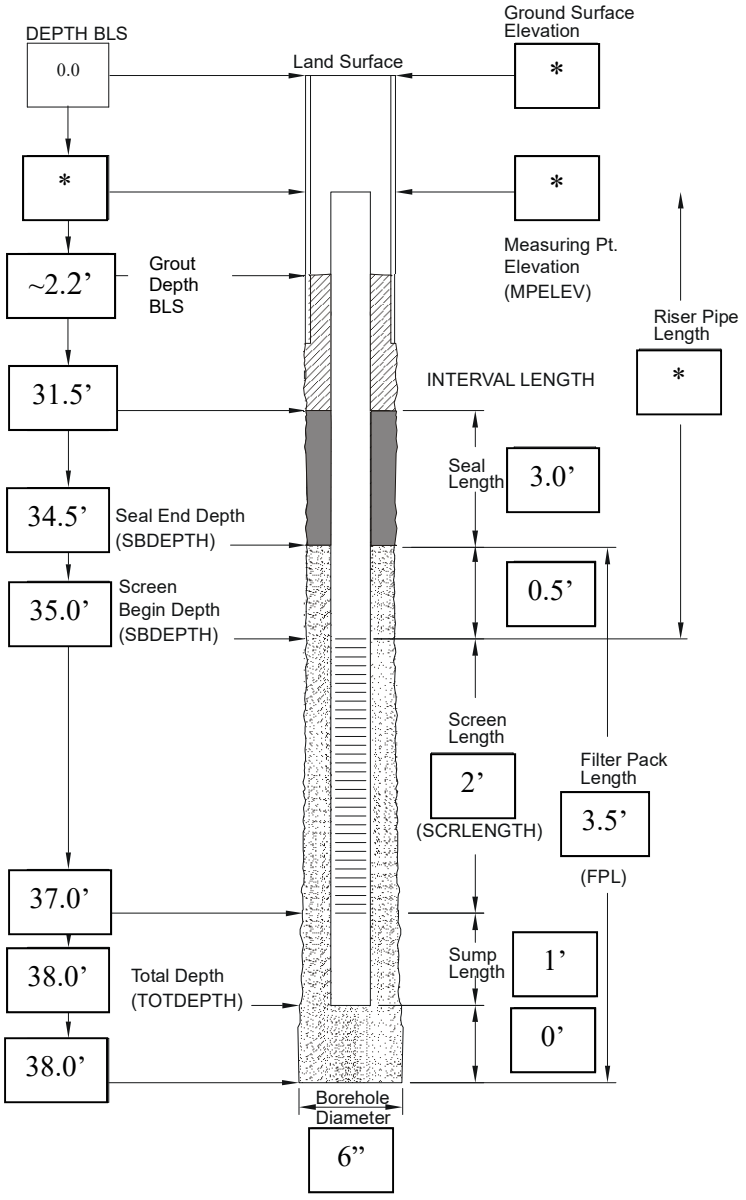
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW250
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/19/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

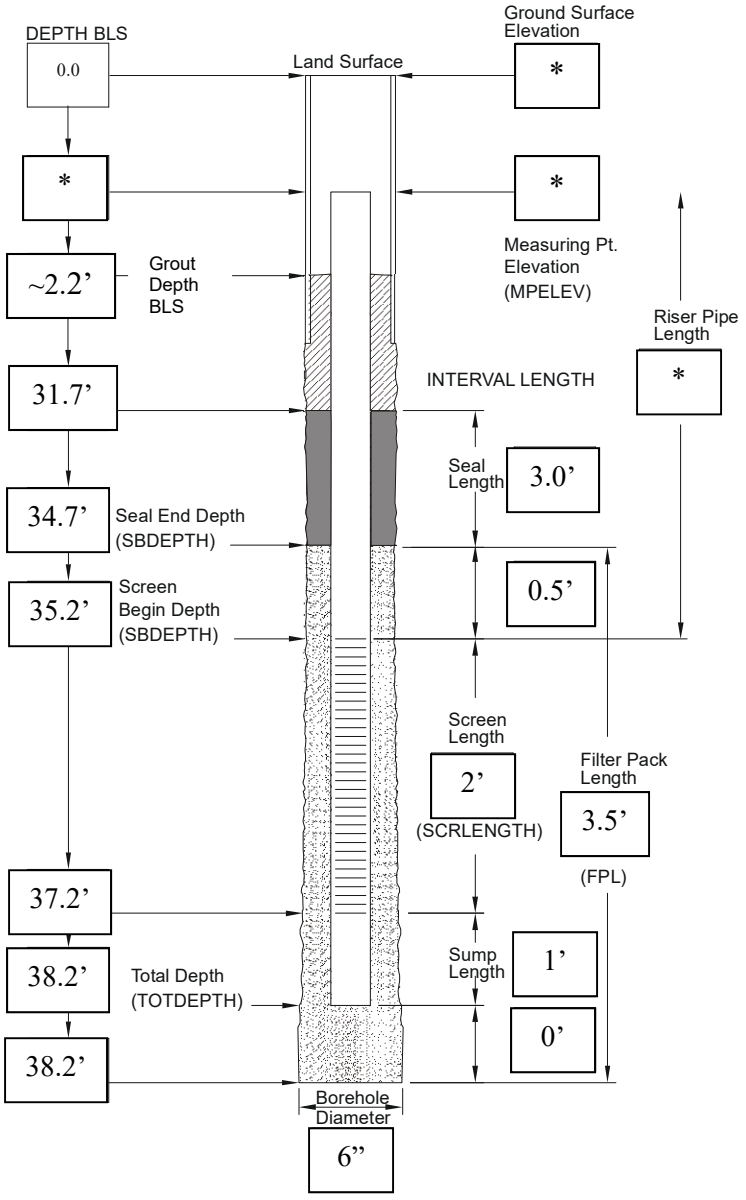
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW251
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/19/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/19/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Presented in CCR

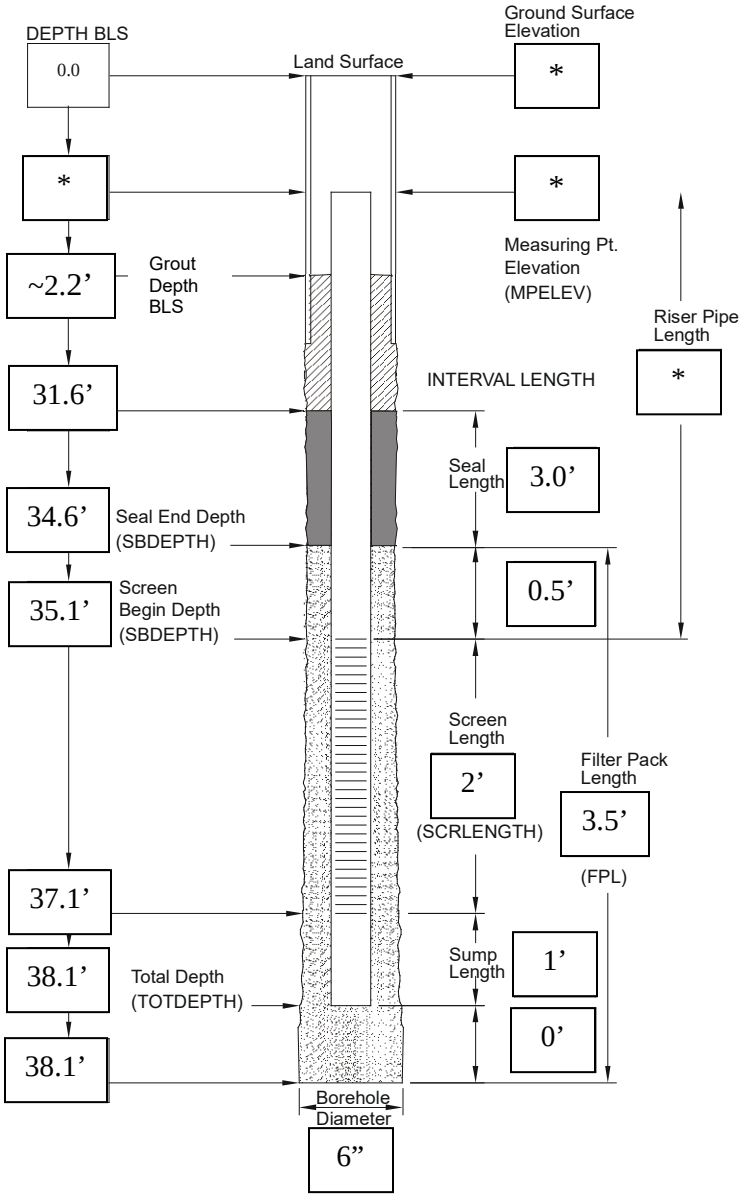
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW252
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/17/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

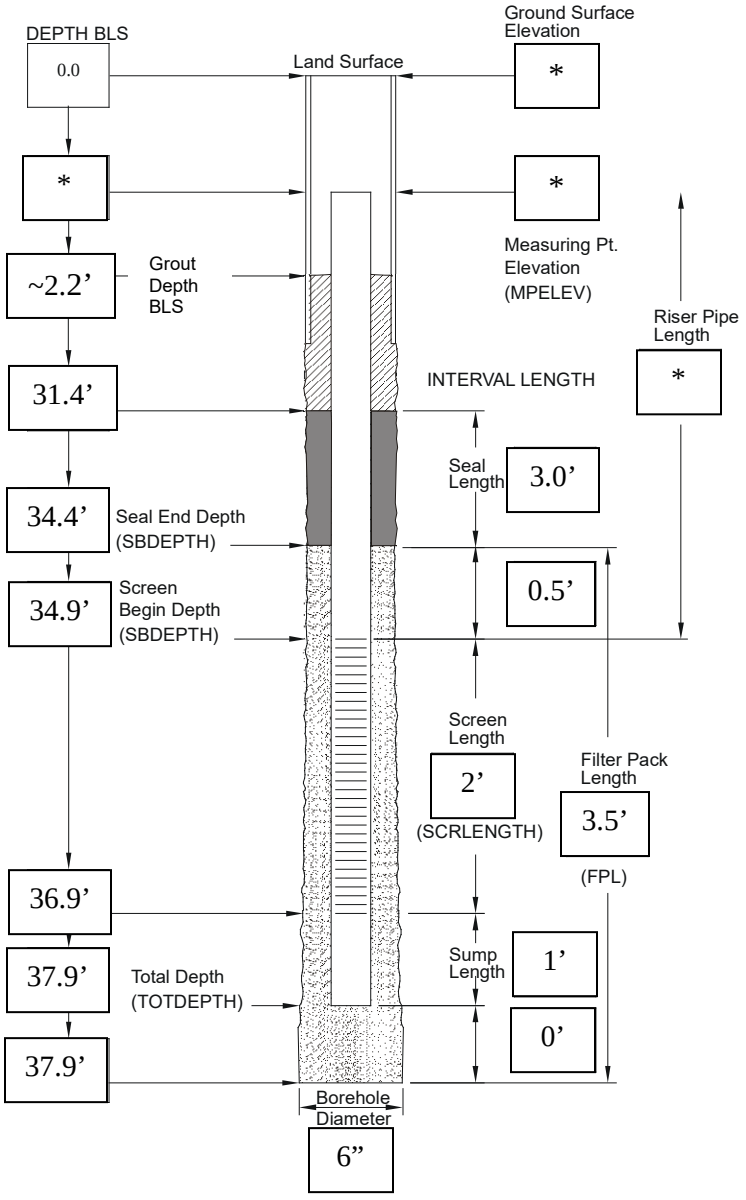
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW253
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/17/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

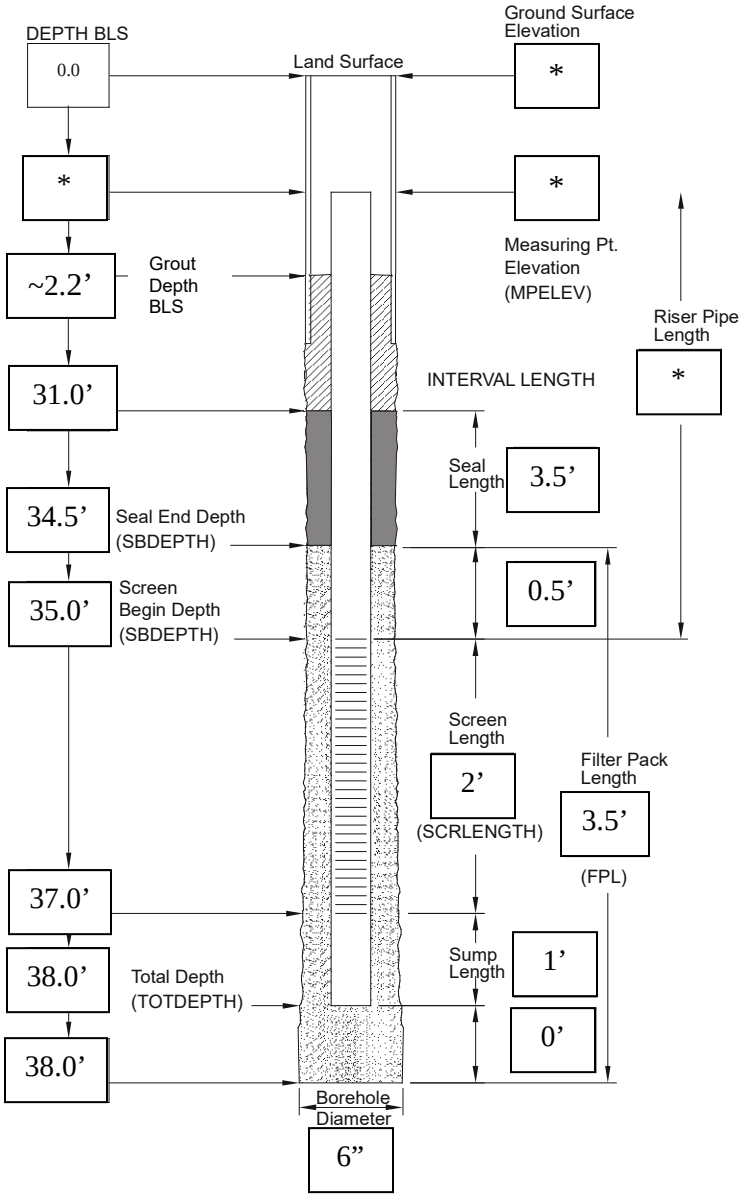
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW254
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/17/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

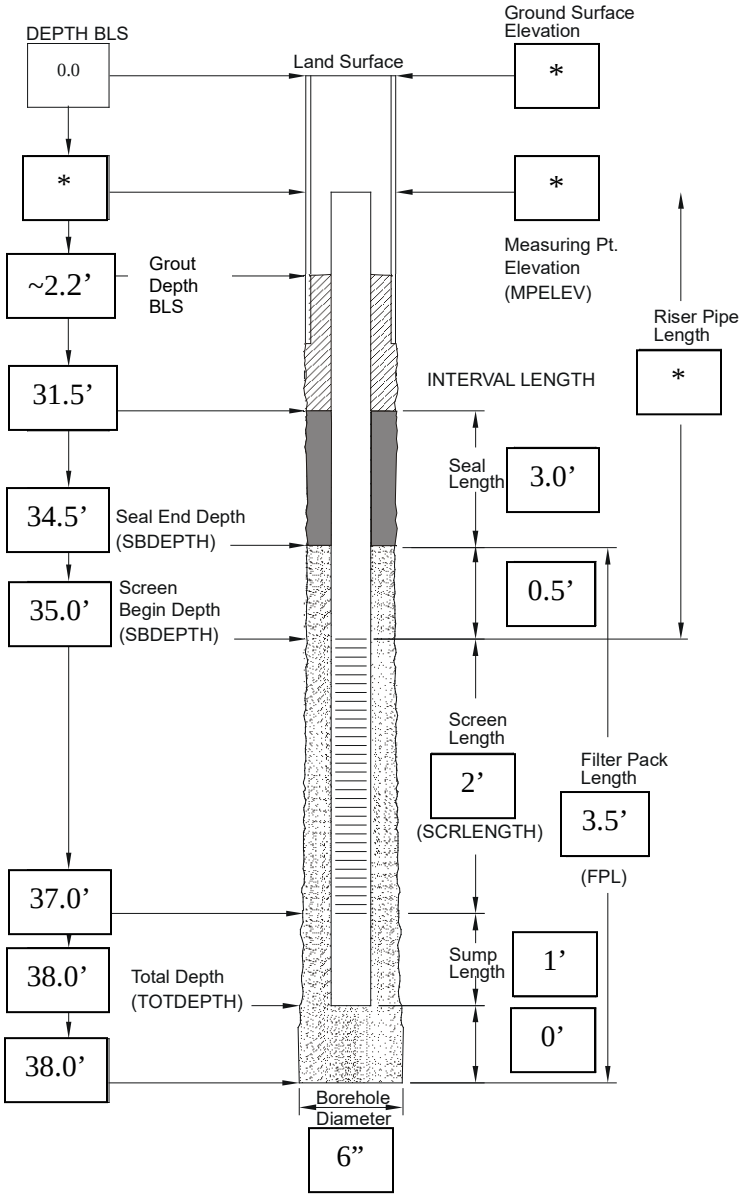
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW255
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/17/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

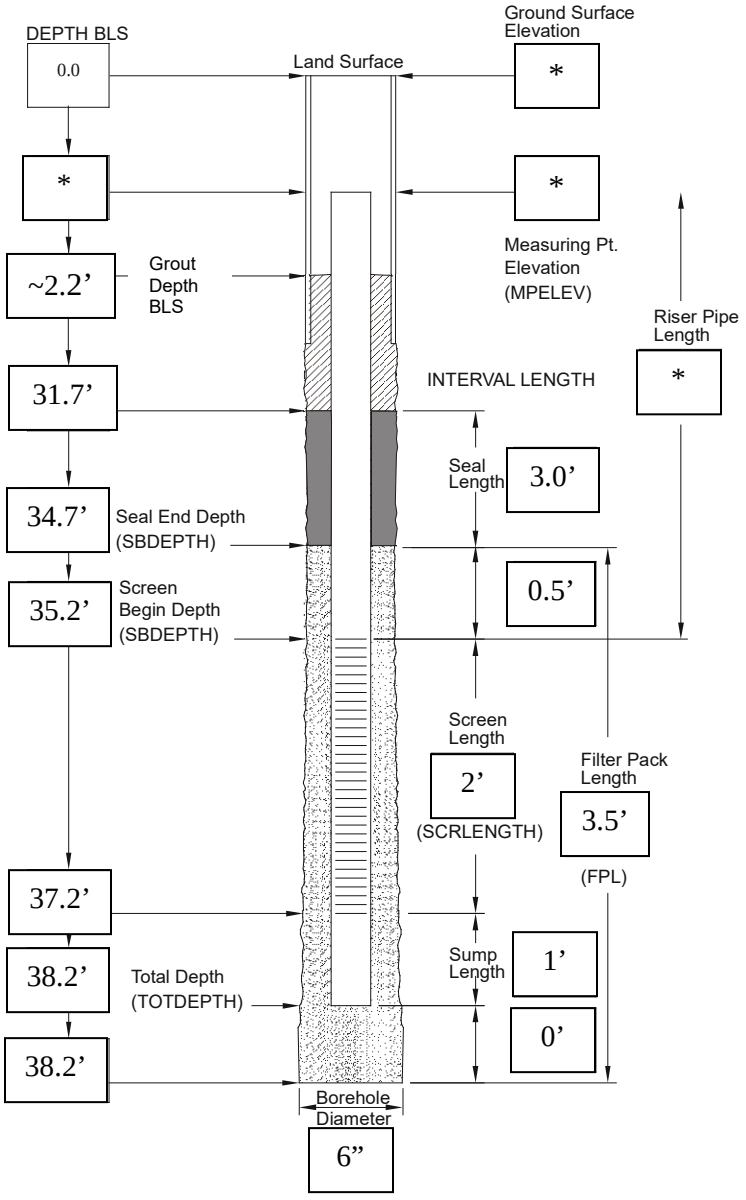
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW256
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/17/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

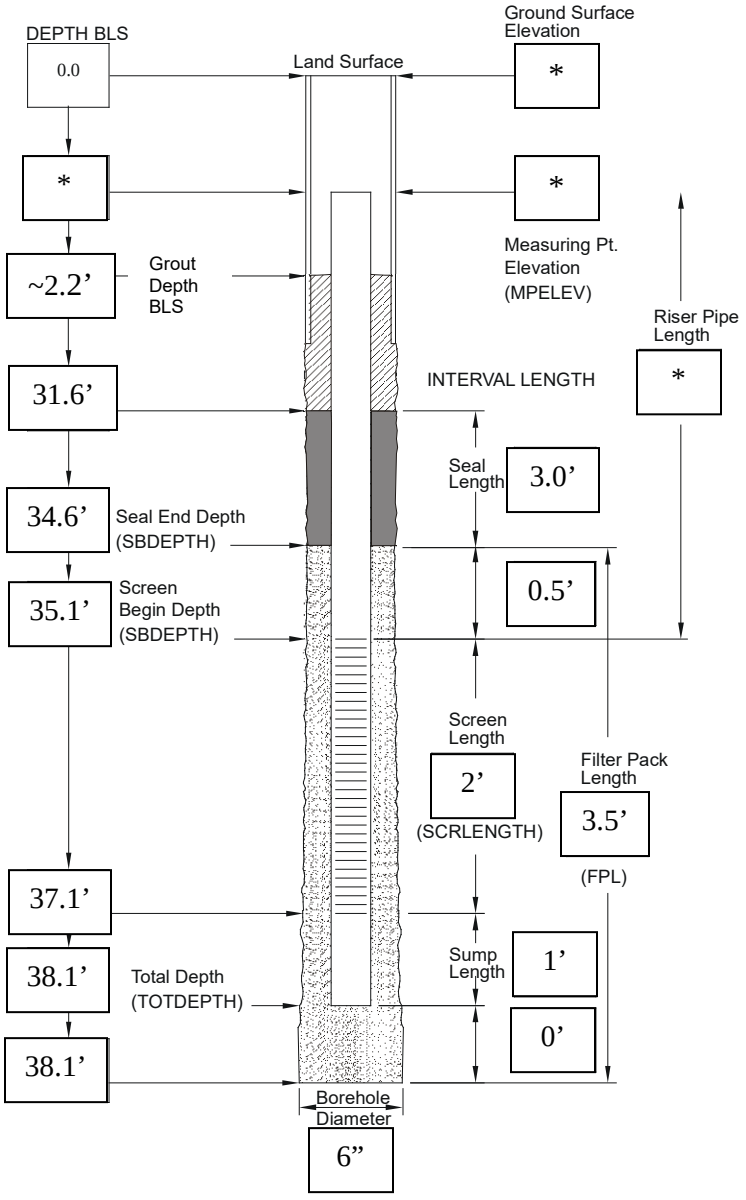
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW257
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/17/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

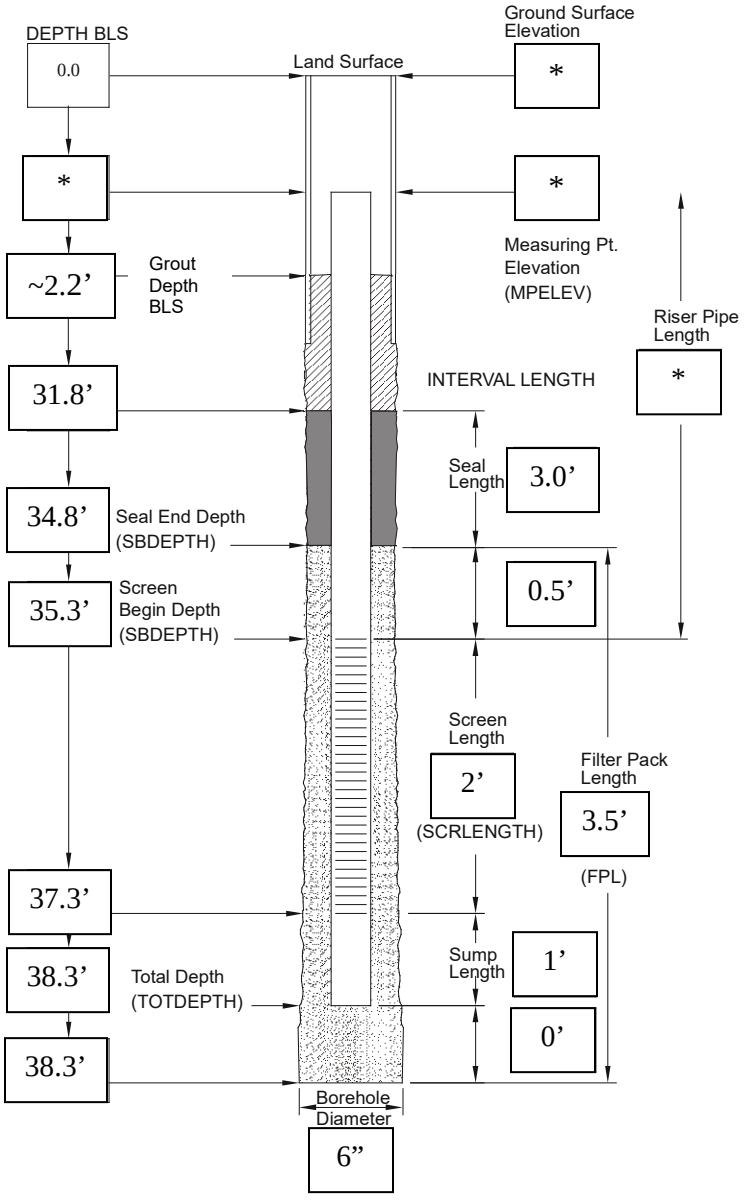
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW258
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/17/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/17/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

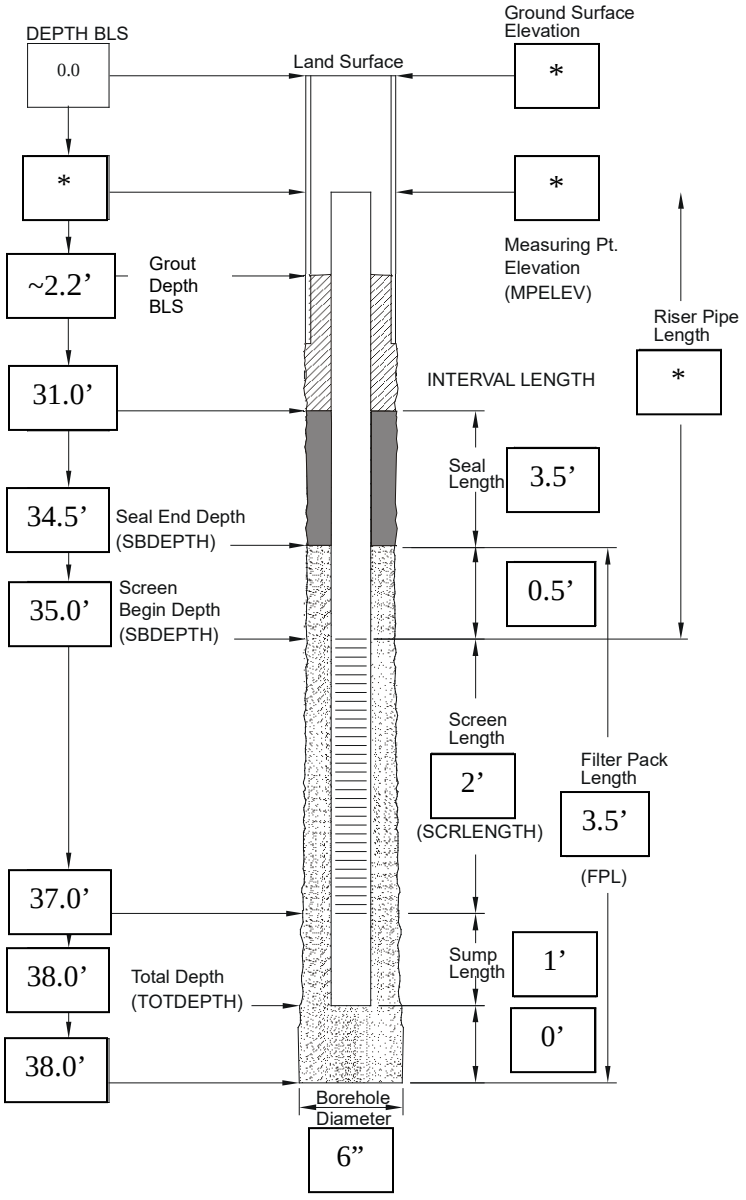
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW259
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/16/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/16/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

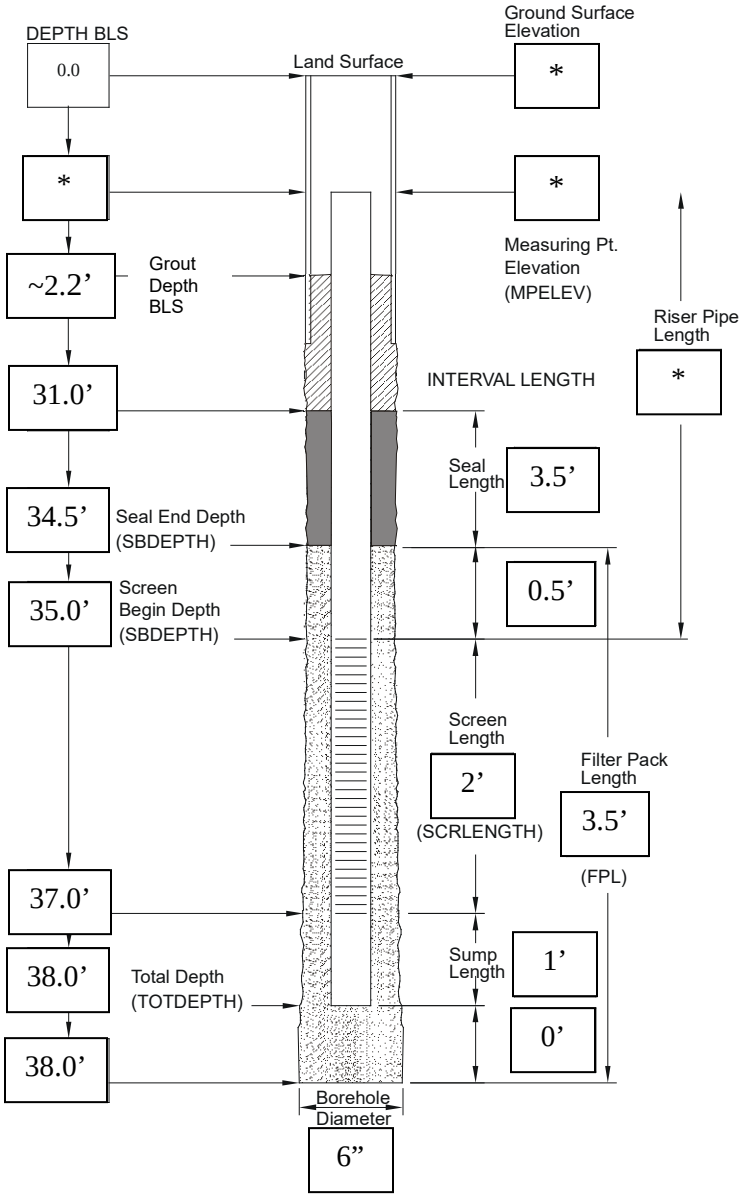
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW260
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/16/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/16/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

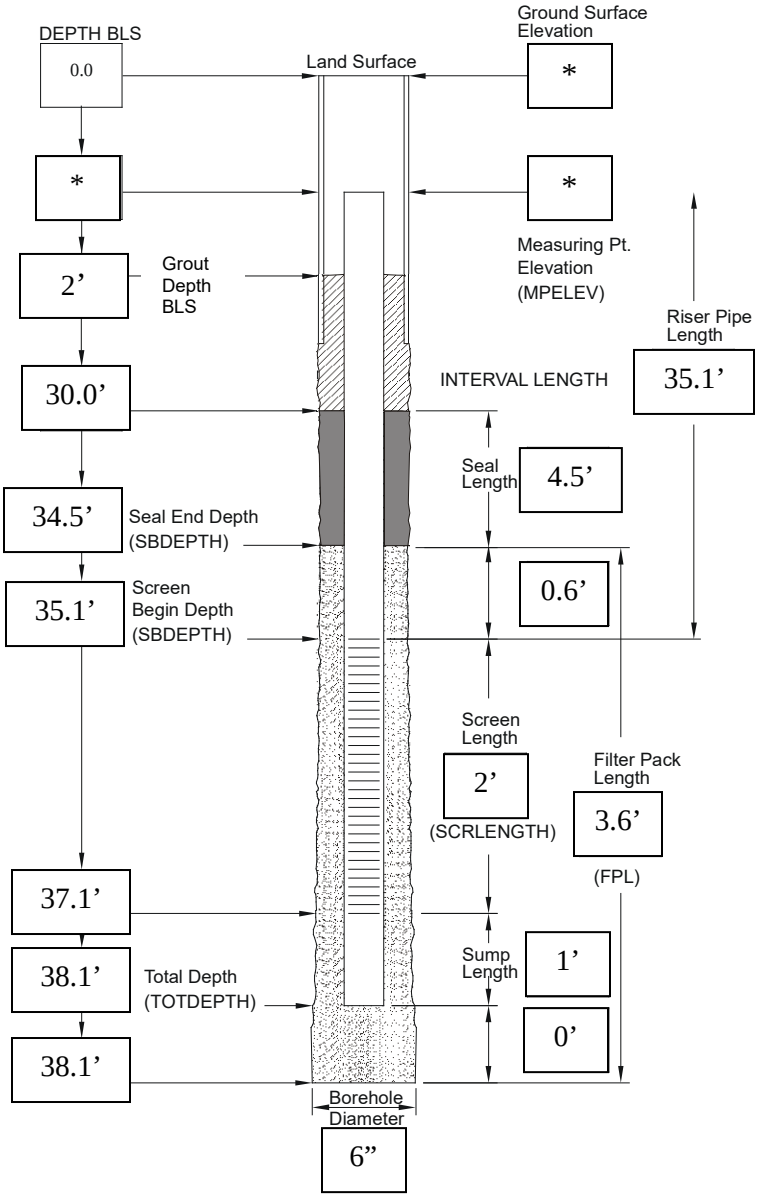
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW261
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/13/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/13/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 10:15
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y)/ N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

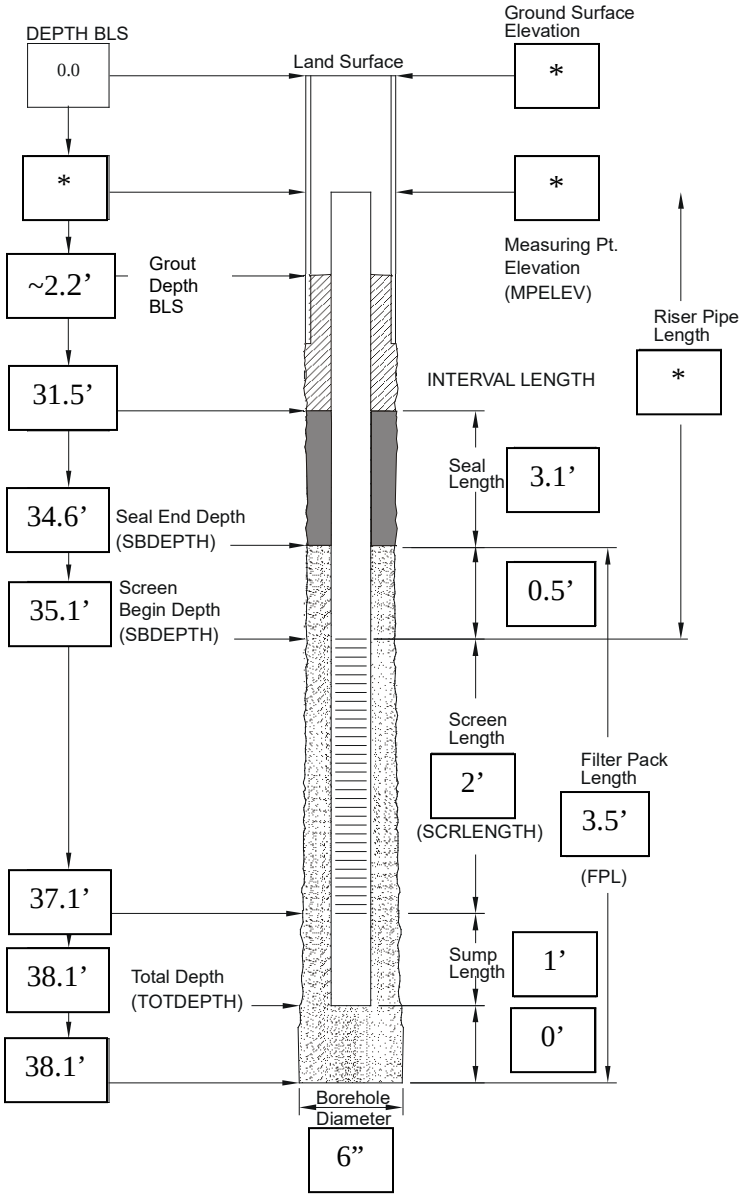
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW262
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/16/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/16/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

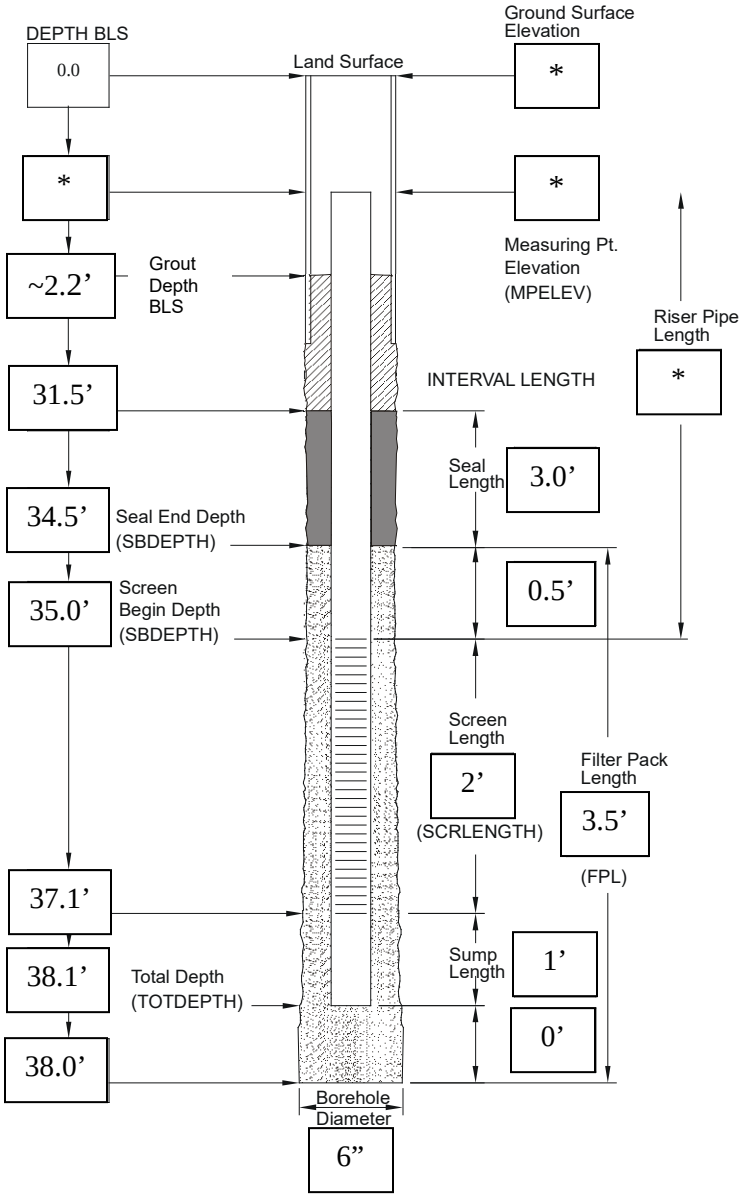
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW263
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/16/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/16/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

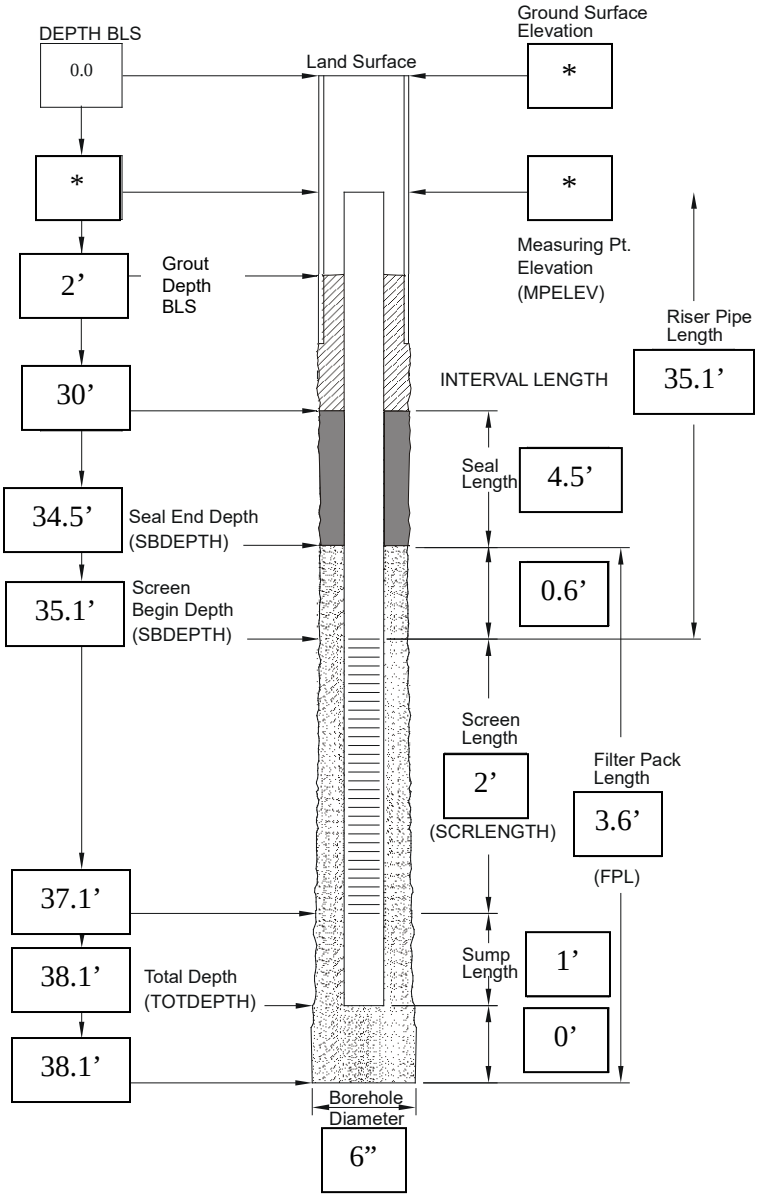
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW264
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/13/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/13/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 11:26-11:46 (20 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

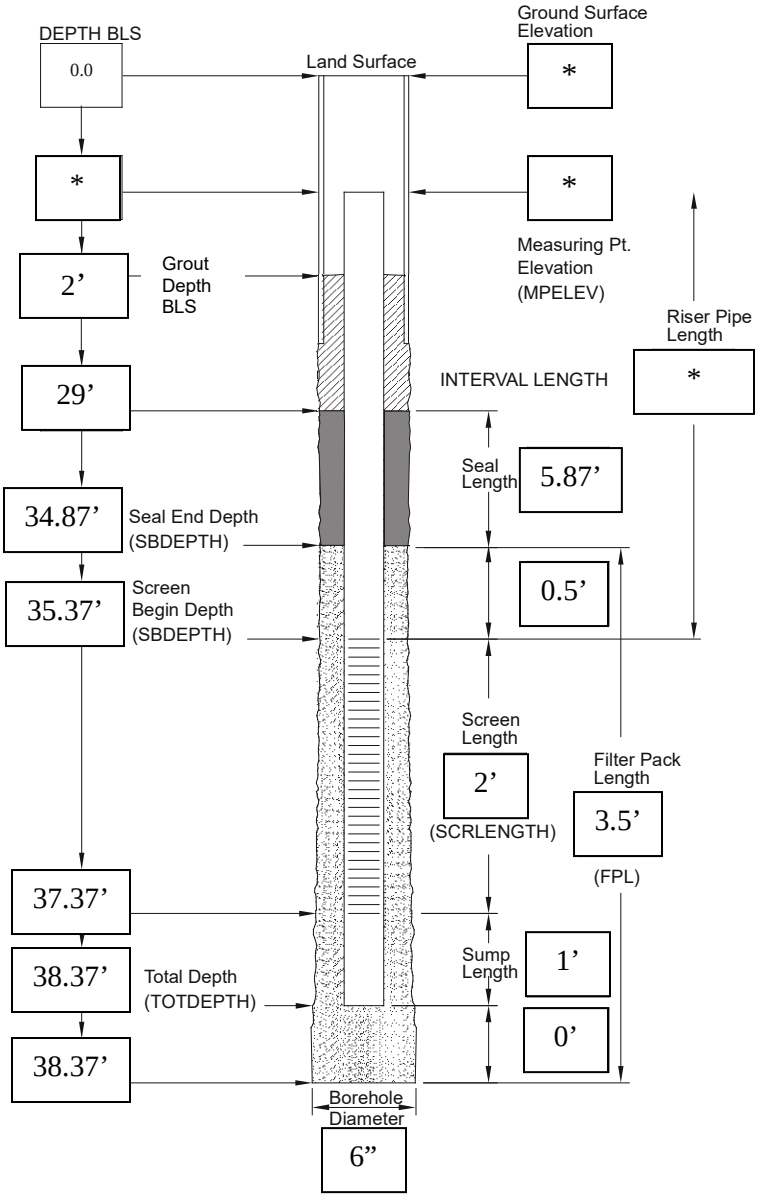
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW265
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/13/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/13/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 09:27-09:30 (23 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

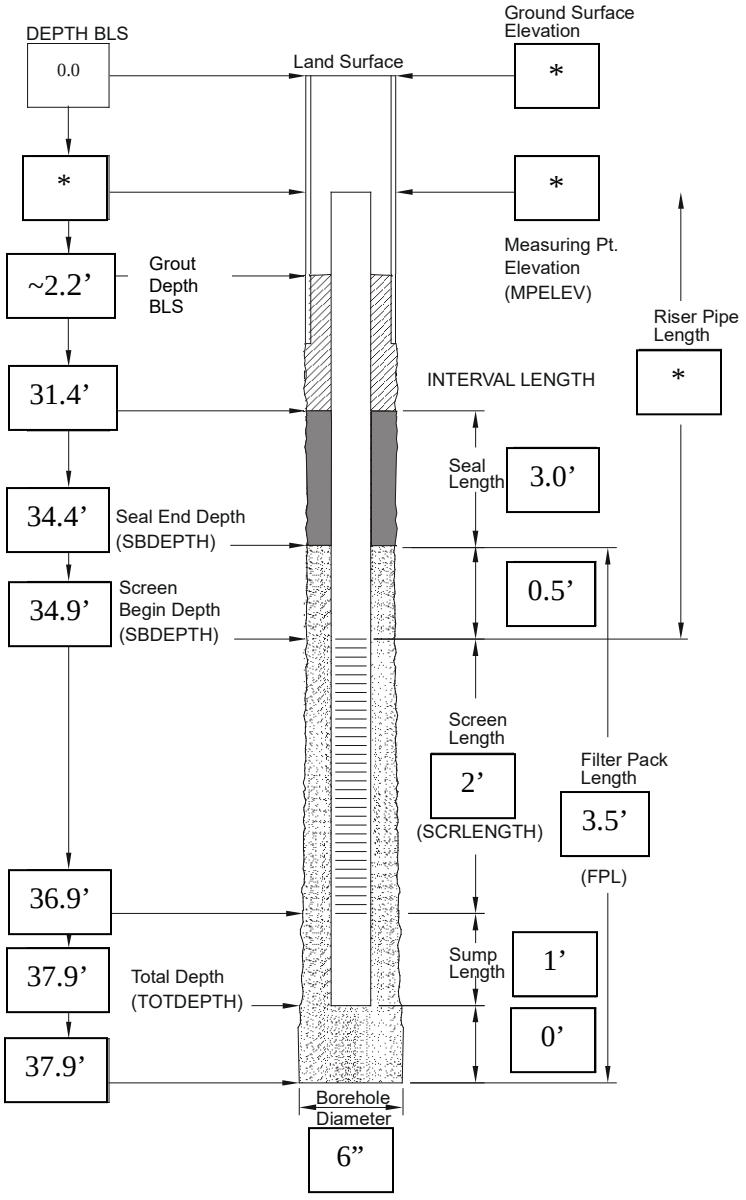
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW266
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/16/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/16/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be presented in CCR

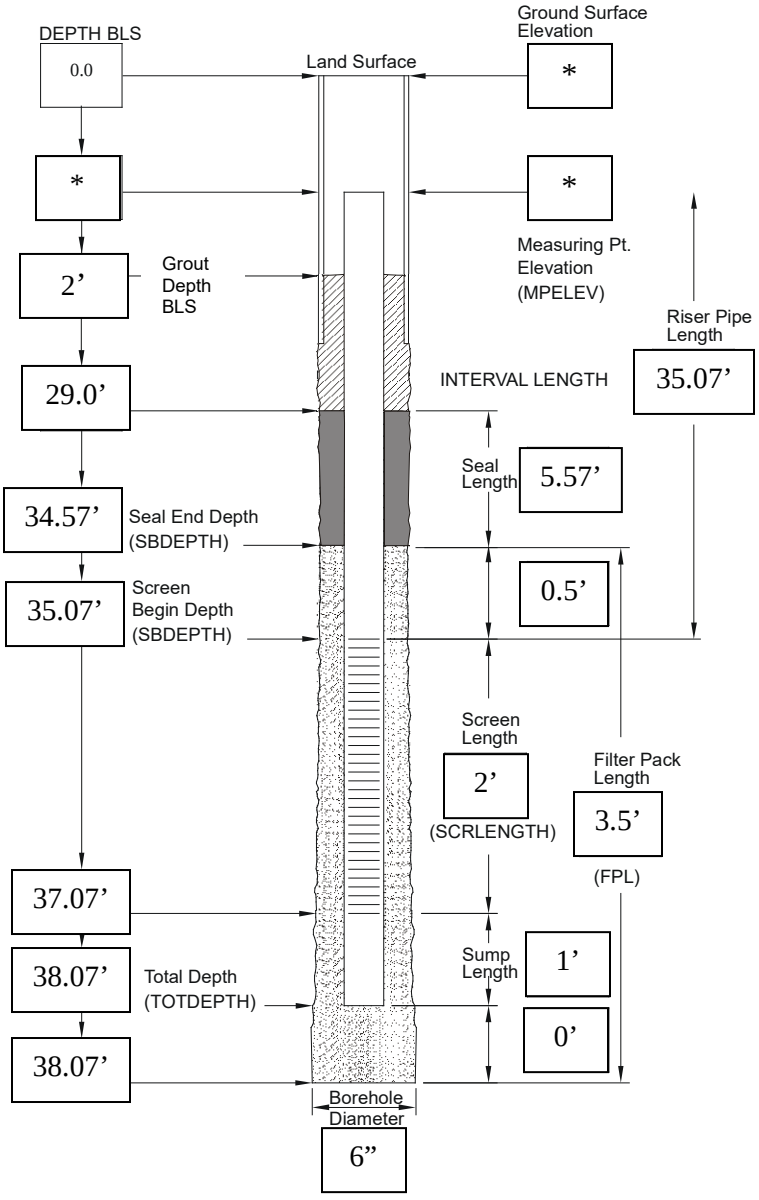
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW267
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/13/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/13/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 07:55-08:20 (25 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

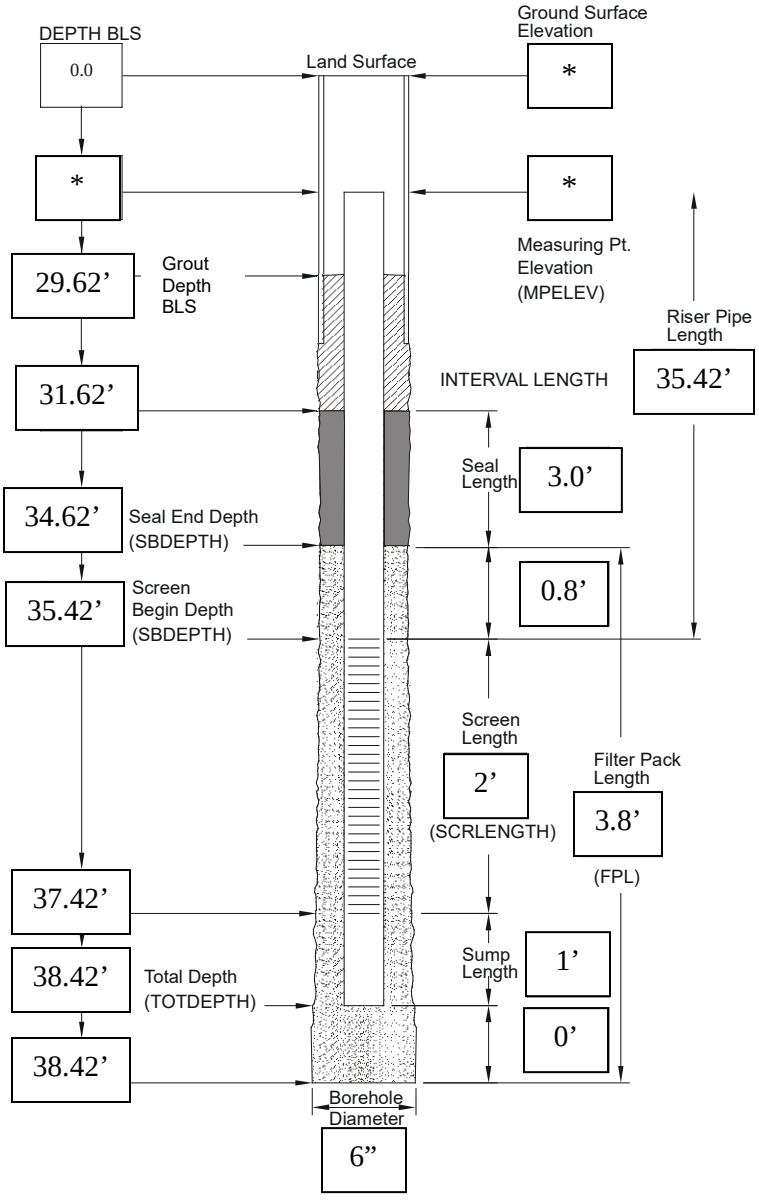
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW268
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/9/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Comments
*FECC to complete ASWs
Well development by removing 10 gallons

Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/9/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 15:10-15:40 (25 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

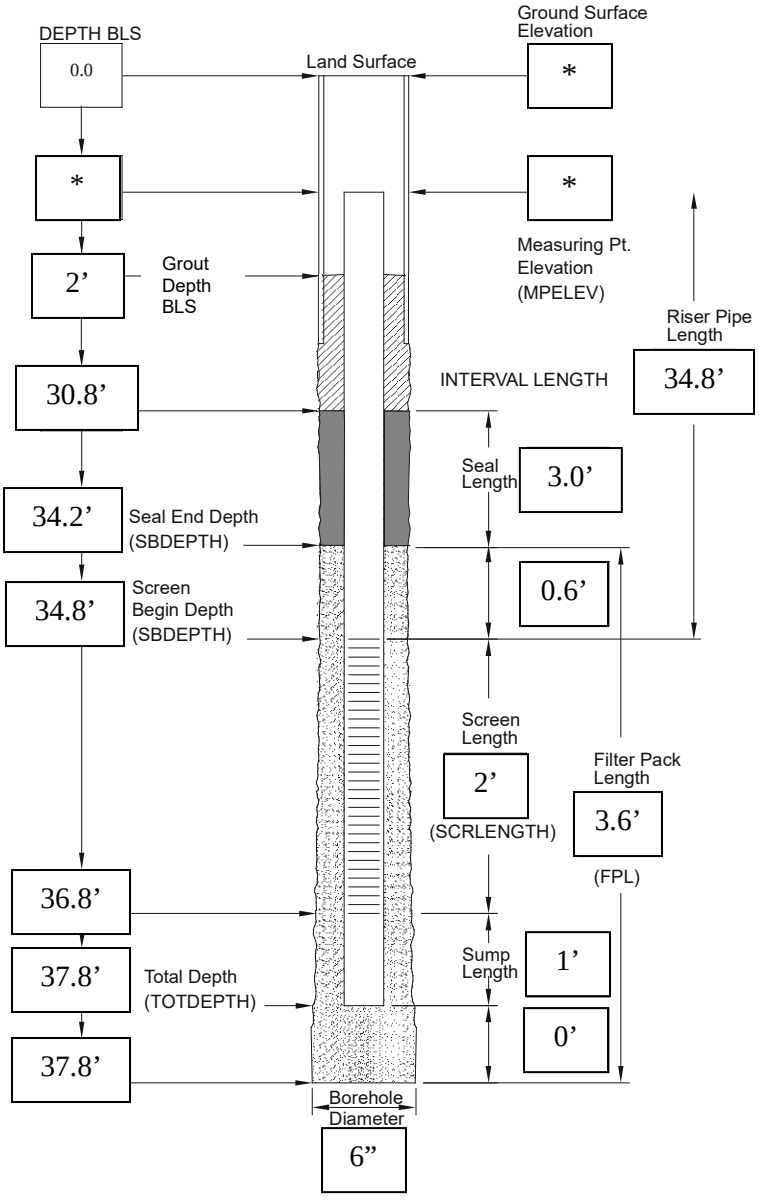
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW269
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/10/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 07:13-07:33 (20 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

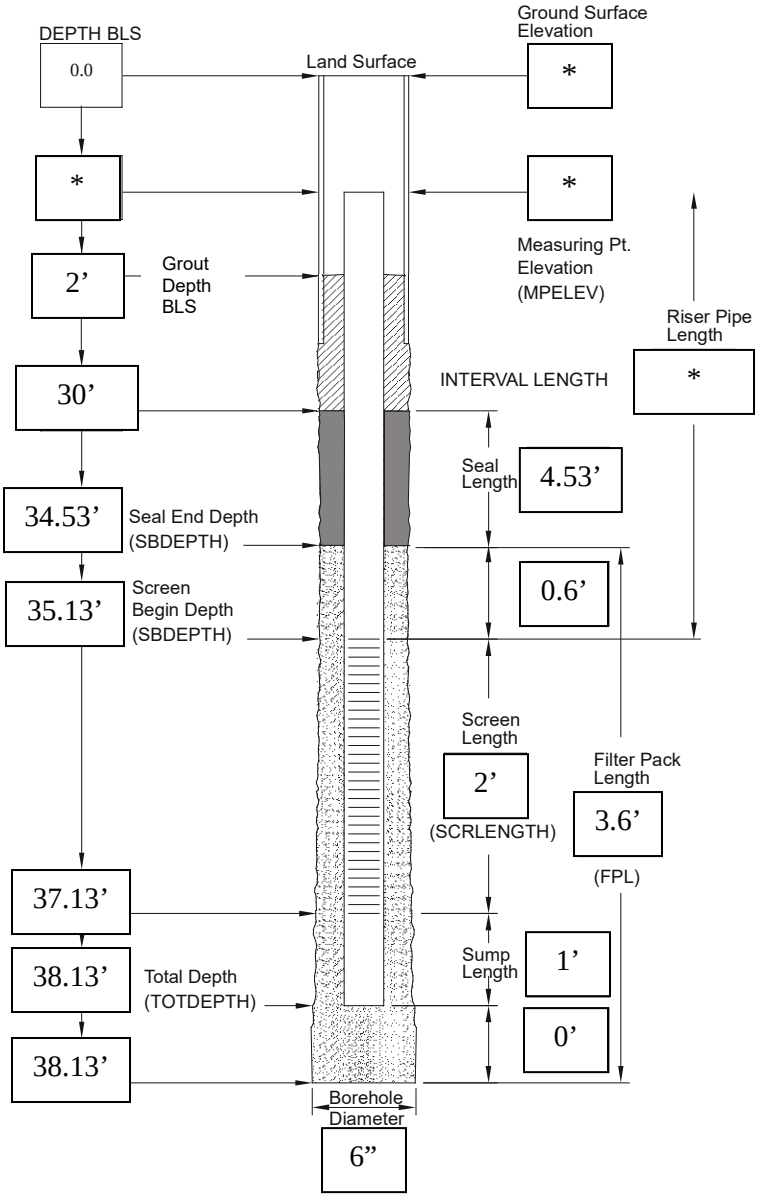
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW270
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/12/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

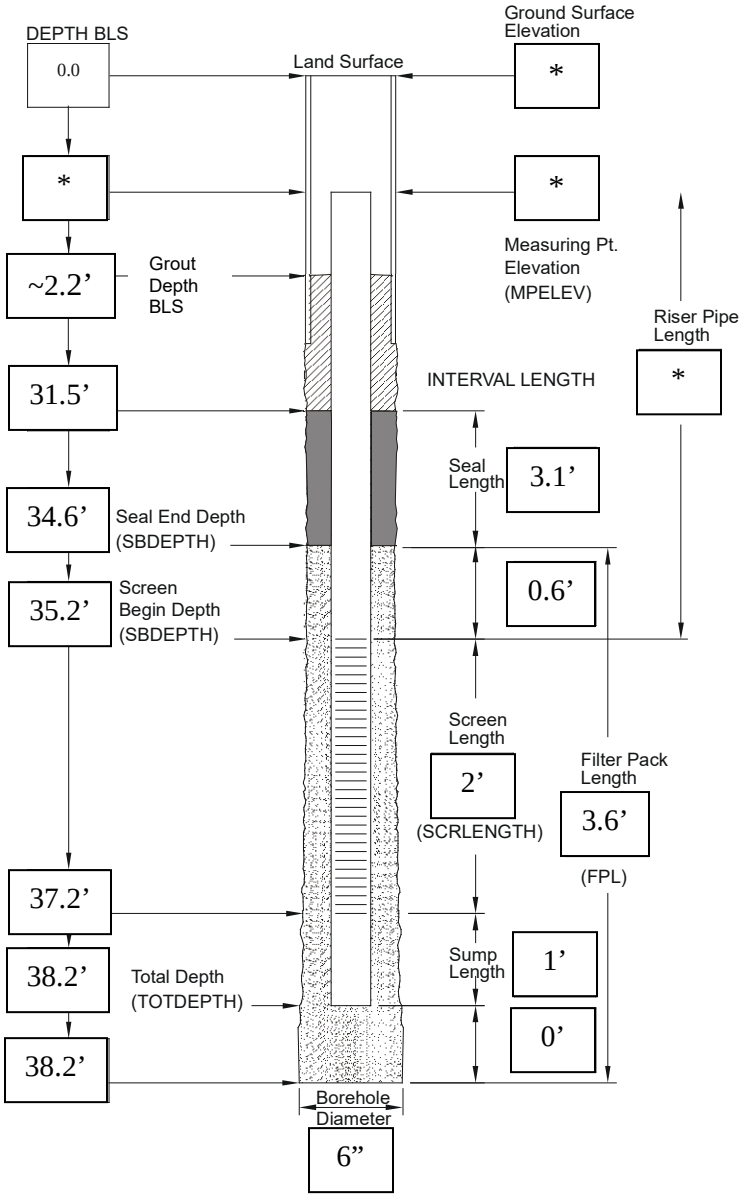
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW271
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/10/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completions to be included in CCR

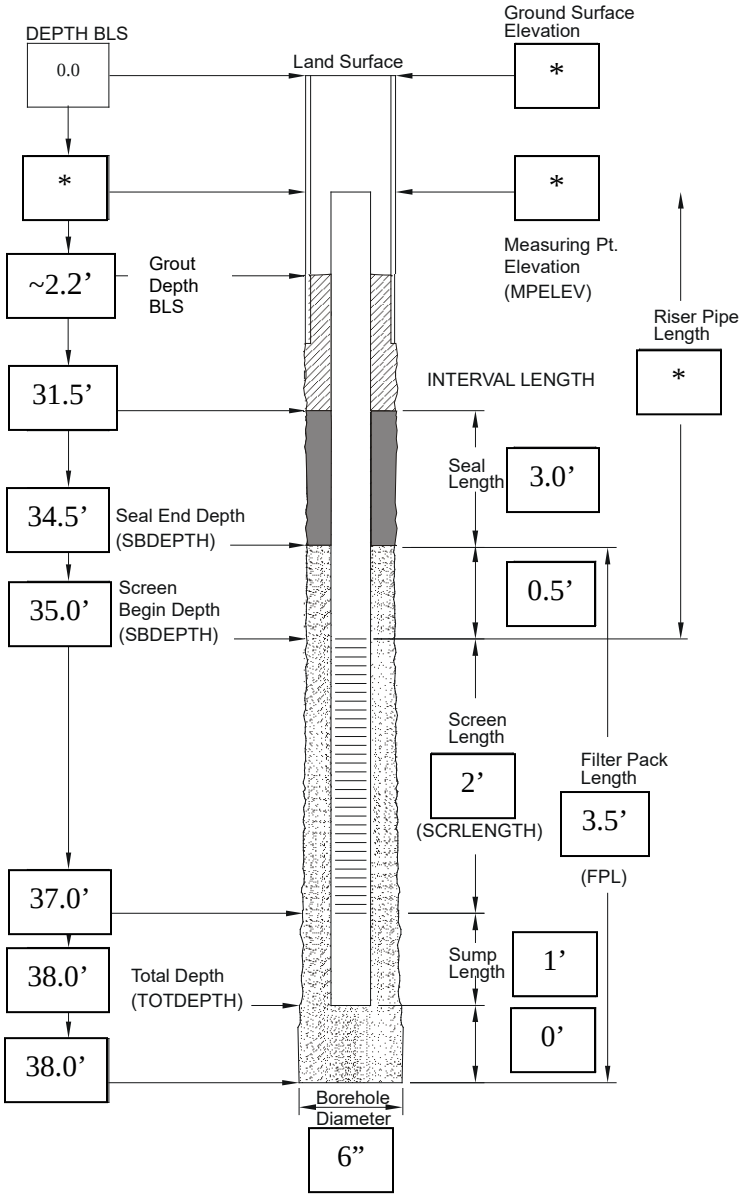
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW272
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: _____ Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/10/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be presented in CCR

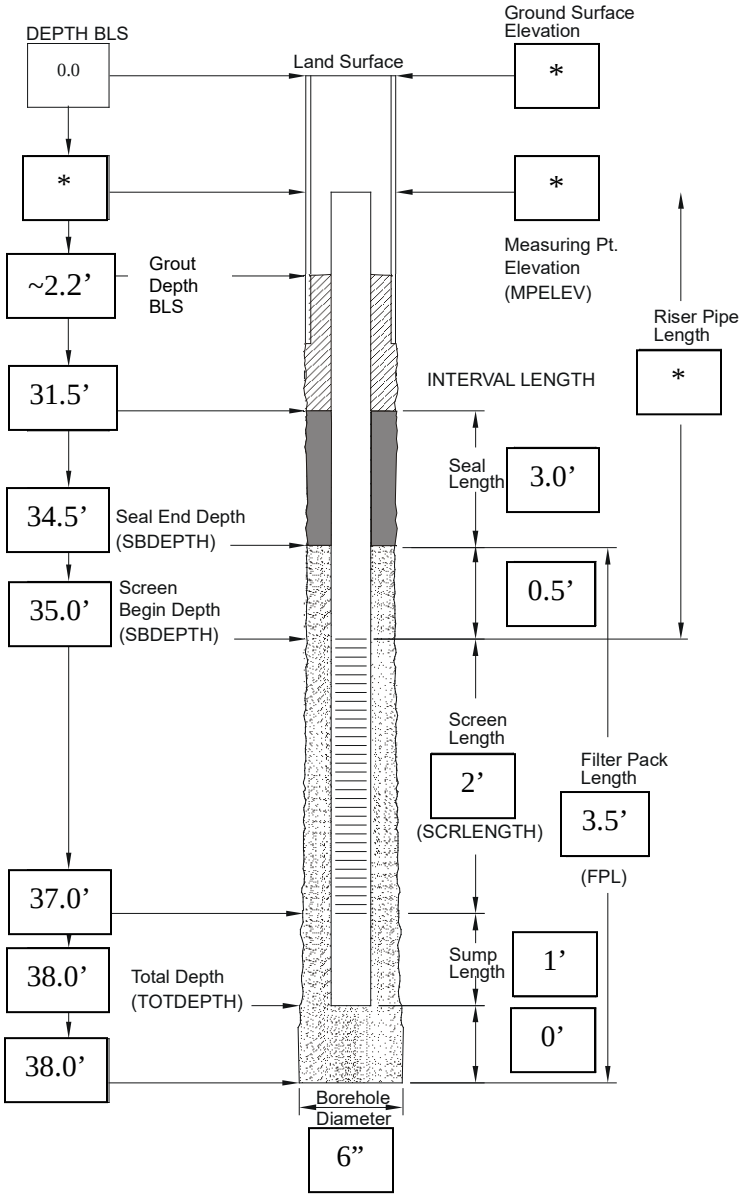
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW273
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Direct Buried
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: N/A ft. x N/A ft.
Protective Casing or Cover
Diameter/Type: N/A
Depth BGS: N/A Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/10/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*To be included in CCR

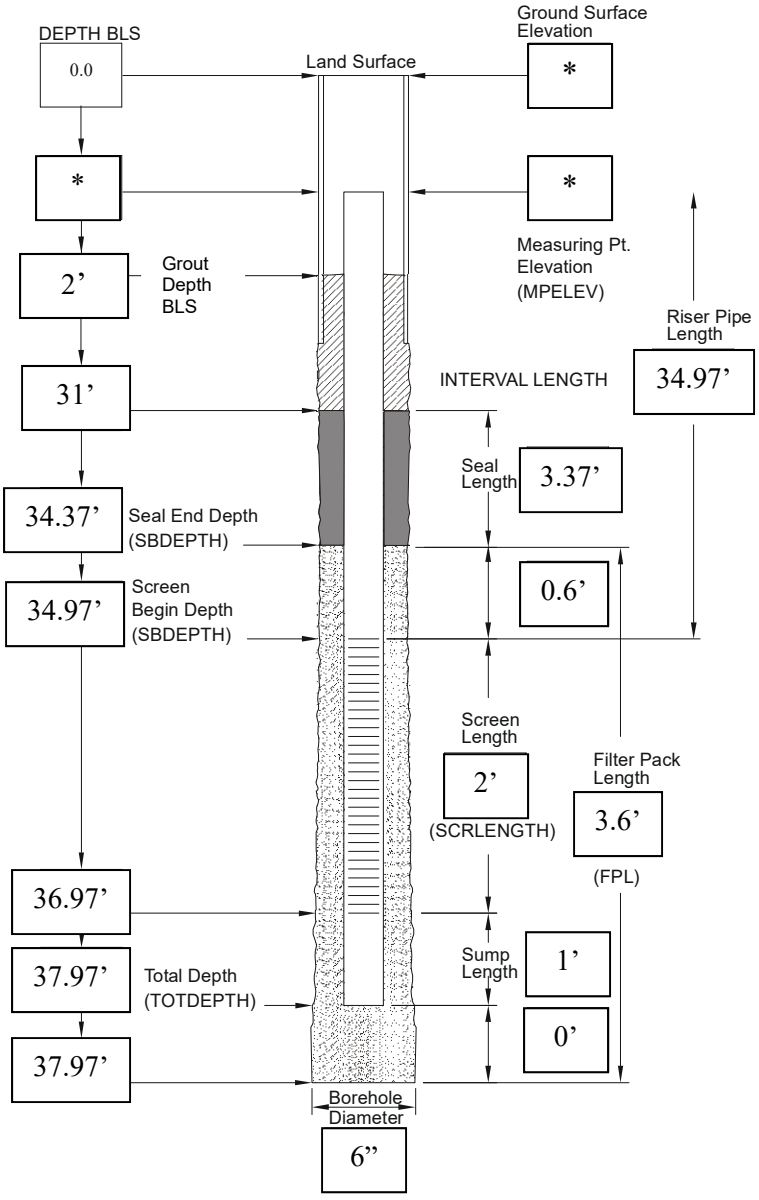
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW274
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/12/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 09:08-09:30 (22 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

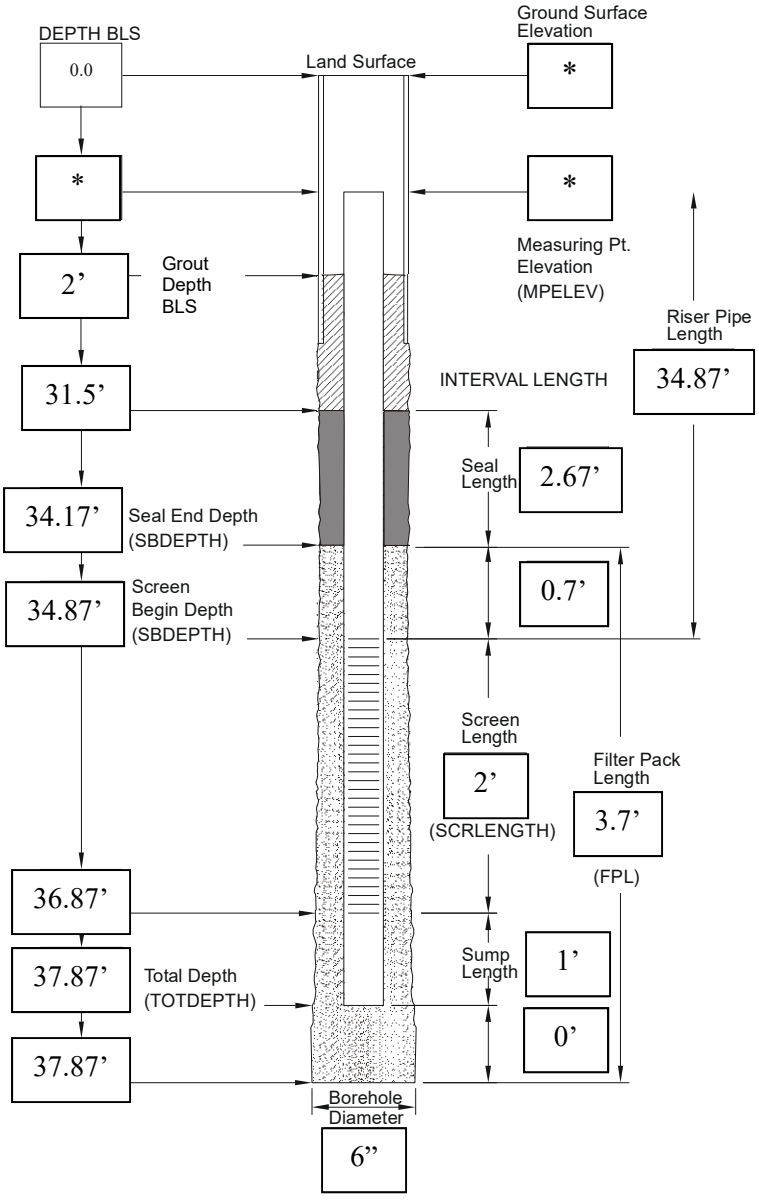
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW275
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/11/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/11/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 15:45-16:05 (20 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

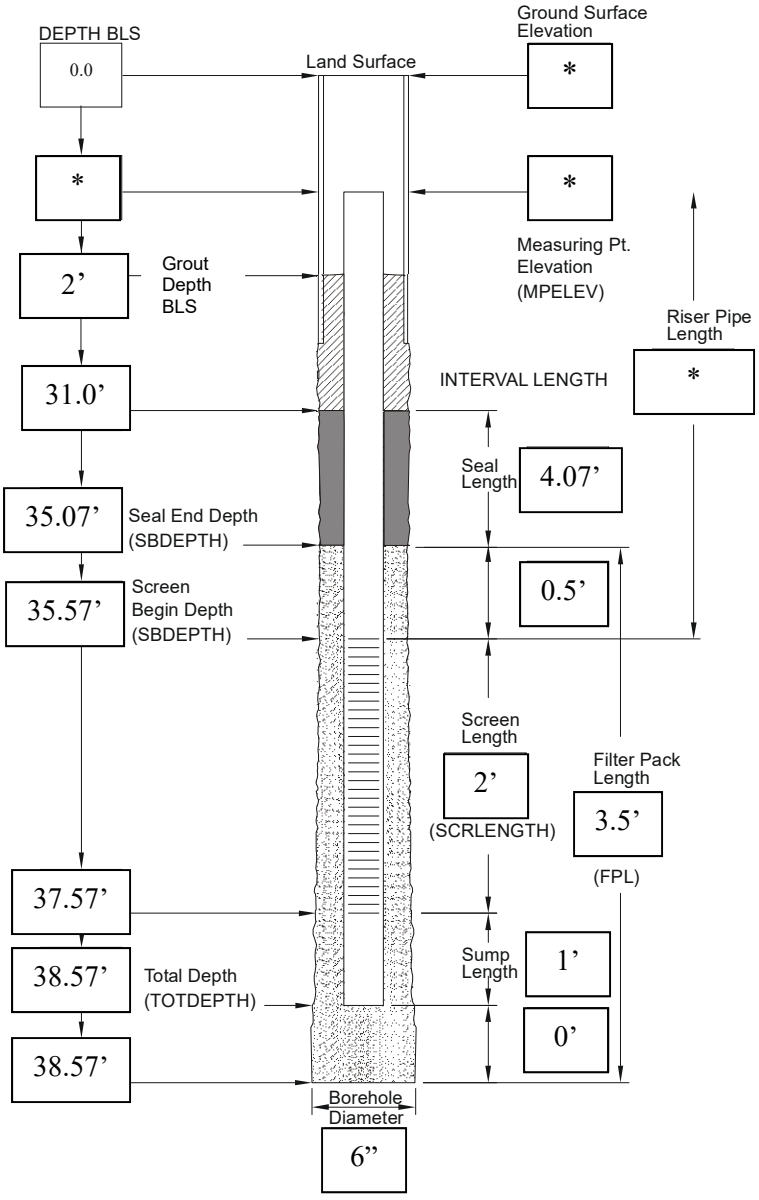
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW276
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/12/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/12/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 07:55-08:20 (25 min)
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

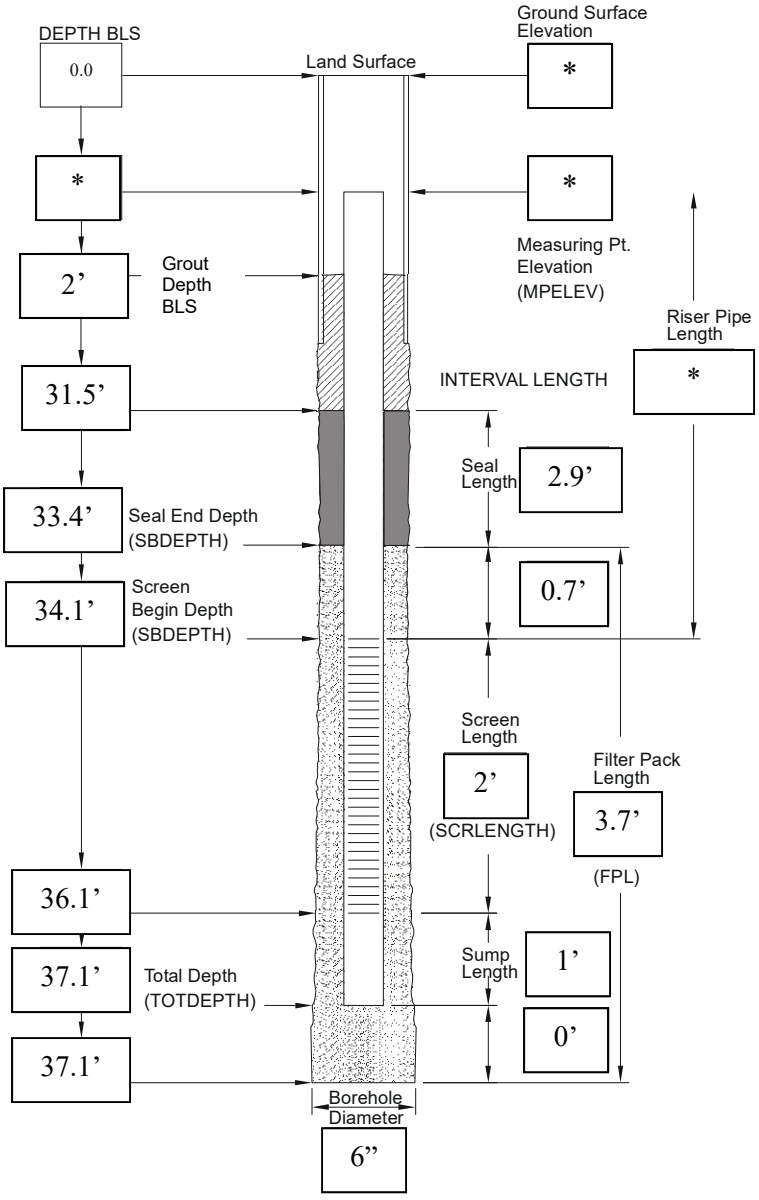
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW277
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Ryan Tuttle
Signature: Ryan Tuttle

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/11/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie
Seal Date: 1/12/17
Type: Bentonite chip (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: ~20 min
Placement Method: Direct pour into casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: 1 ¼ bags (~60 lbs)
Placement Method: Direct pour into casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*FECC to complete ASWs

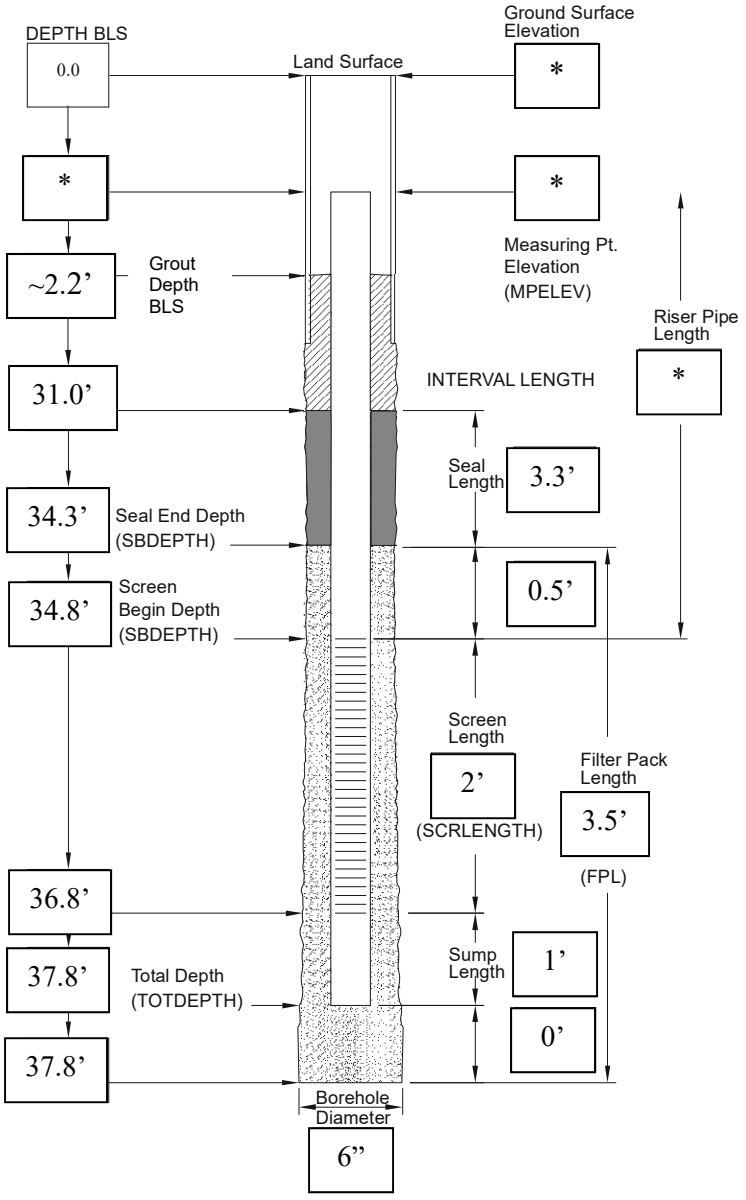
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW278
Drilling Company: Groundwater Protection
Drillers: Billy Moss
Geologist/Engineer: D. Sizemore
Signature: D. Sizemore

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/10/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/10/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 30 min
Placement Method: Through casing
Vol. Fluid Added: NR
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y / (N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be presented in CCR

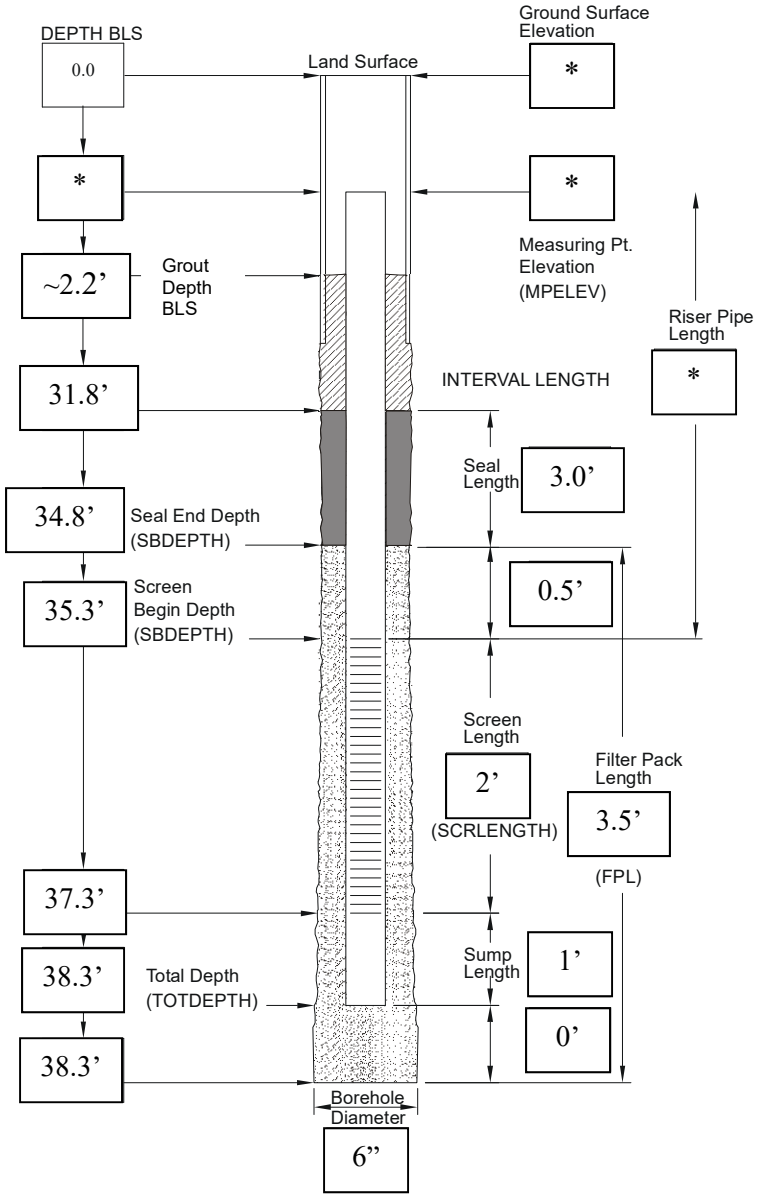
Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

Geosyntec consultants

AIR SPARGE WELL CONSTRUCTION LOG

Well I.D.: ASW279
Drilling Company: Groundwater Protection
Drillers: Dave Longino
Geologist/Engineer: Zackery Munger
Signature: Zackery Munger

Site: Launch Complex 39B (LC39B)
Project Number: FR1352E, Phase 08
Installation Method: Rotosonic
Casing Installation Date: 1/25/17
Well Type: Air Sparge
Well Completion Method: Flush
Geologic Completion Zone: Surficial



Well Completion
Guard Posts (Y / N) Date: None
Surface Pad Size: 2 ft. x 2 ft.
Protective Casing or Cover
Diameter/Type: 12" Diameter Steel Manhole
Depth BGS: ~6" Weep Hole (Y / (N))
Grout
Composition/Proportions: 1:1 Portland Cement to Water
Placement Method: Tremie

Seal Date: 1/25/17
Type: Bentonite pellets (uncoated)
Source: Pel-Plug
Set-up/Hydration Time: 20 min
Placement Method: Pour through casing
Vol. Fluid Added: Not recorded
Filter Pack
Type: 20/30 sand
Source: Standard Sand and Silica
Amount Used: ~60 lbs
Placement Method: Pour through casing
Well Riser Pipe
Casing Material: Sch. 40 PVC
Casing Inside Diameters: 2 in.
Screen
Material: Sch. 40 PVC
Inside Diameter: 2 in.
Screen Slot Size: 0.010 in.
Percent Open Area: NR
Sump or Bottom Cap ((Y) / N)
Type/Length: 1 ft Sch. 40 PVC
Backfill Plug (Y /(N))
Material: N/A
Placement Method: N/A
Set-up/Hydration Time: N/A
Total Water Volume During Construction
Introduced (Gal): Not recorded
Recovered (Gal): ~10 gal
Reviewed
By: Mike Burcham Date: 5/25/17

Comments
*Surface completion to be included in CCR

Note: seal installed below the water table; thereofre, no water needed for bentonite hydration.

APPENDIX D
LABORATORY ANALYTICAL RESULTS
(FURNISHED ON CD)

NOVEMBER THROUGH DECEMBER 2016
BASELINE GROUNDWATER SAMPLING

LABORATORY ANALYTICAL RESULTS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
6681 Southpoint Pkwy Jacksonville, FL 32216
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (904)363-9350
Fax: (904)363-9354

December 13, 2016

Mike Burcham
Geosyntec Consultants
11490Westheimer Suite 150
Houston, TX 77077

RE: Workorder: J1611709 NASA KSC LC39B

Dear Mike Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, December 02, 2016. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

Enclosures

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Fax: (904)363-9354

SAMPLE SUMMARY

Workorder: J1611709 NASA KSC LC39B

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J1611709001	LC39B-MW0031-012.5-20161128	Water	11/28/2016 14:23	12/2/2016 14:34
J1611709002	LC39B-MW0033-041.0-20161128	Water	11/28/2016 13:55	12/2/2016 14:34
J1611709003	LC39B-MW0010-027.0-20161128	Water	11/28/2016 13:28	12/2/2016 14:34
J1611709004	LC39B-MW0011-045.0-20161128	Water	11/28/2016 13:06	12/2/2016 14:34
J1611709005	LC39B-MW0012-045.0-20161128	Water	11/28/2016 12:41	12/2/2016 14:34
J1611709006	LC39B-MW0020-045.0-20161128	Water	11/28/2016 12:17	12/2/2016 14:34
J1611709007	LC39B-MW0013-021.0-20161128	Water	11/28/2016 11:52	12/2/2016 14:34
J1611709008	LC39B-MW0032-013.0-20161128	Water	11/28/2016 14:54	12/2/2016 14:34
J1611709009	LC39B-MW0037-031.0-20161130	Water	11/30/2016 15:06	12/2/2016 14:34
J1611709010	LOX-TA0004S-013.0-20161201	Water	12/1/2016 10:21	12/2/2016 14:34
J1611709011	LC39B-MW0029-035.0-20161130	Water	11/30/2016 14:12	12/2/2016 14:34
J1611709012	LC39B-MW0040-017.0-20161201	Water	12/1/2016 12:24	12/2/2016 14:34
J1611709013	LC39B-MW0034-013.0--20161130	Water	11/30/2016 16:04	12/2/2016 14:34
J1611709014	LC39B-MW0027-045.0--20161130	Water	11/30/2016 12:24	12/2/2016 14:34
J1611709015	LC39B-MW0025-045.0-20161130	Water	11/30/2016 11:36	12/2/2016 14:34
J1611709016	LC39B-MW0023-045.0-20161130	Water	11/30/2016 10:50	12/2/2016 14:34
J1611709017	LC39B-MW0039-011.0-20161201	Water	12/1/2016 12:39	12/2/2016 14:34
J1611709018	LOX-TA0002S-013.0-20161201	Water	12/1/2016 12:01	12/2/2016 14:34
J1611709019	ECS-IW0008I-044.5-20161201	Water	12/1/2016 09:31	12/2/2016 14:34
J1611709020	ECS-IW0006I-035.0-20161201	Water	12/1/2016 08:56	12/2/2016 14:34
J1611709021	ECS-IW0004I-044.0-20161201	Water	12/1/2016 08:23	12/2/2016 14:34
J1611709022	ECS-IW0005I-044.5-20161201	Water	12/1/2016 07:56	12/2/2016 14:34
J1611709023	LC39B-MW0028-045.0-20161130	Water	11/30/2016 16:15	12/2/2016 14:34
J1611709024	LC39B-MW0035-023.0-20161130	Water	11/30/2016 15:49	12/2/2016 14:34
J1611709025	LC39B-MW0038-041.0-20161130	Water	11/30/2016 14:48	12/2/2016 14:34
J1611709026	LC39B-MW0030-045.0-20161130	Water	11/30/2016 14:06	12/2/2016 14:34
J1611709027	LC39B-MW0026-035.0-20161130	Water	11/30/2016 12:17	12/2/2016 14:34
J1611709028	LC39B-MW0022-035.0-20161129	Water	11/29/2016 10:29	12/2/2016 14:34
J1611709029	LC39B-MW0024-035.0-20161130	Water	11/30/2016 11:26	12/2/2016 14:34
J1611709030	LC39B-MW0021-025.0-20161130	Water	11/30/2016 10:46	12/2/2016 14:34
J1611709031	LC39B-MW0017-035.0-20161129	Water	11/29/2016 15:22	12/2/2016 14:34
J1611709032	LC39B-MW0015-031.0-20161129	Water	11/29/2016 13:50	12/2/2016 14:34
J1611709033	LC39B-MW0014-021.0-20161129	Water	11/29/2016 14:31	12/2/2016 14:34
J1611709034	LC39B-MW0019-035.0-20161129	Water	11/29/2016 16:27	12/2/2016 14:34
J1611709035	LC39B-MW0018-025.0-20161129	Water	11/29/2016 16:12	12/2/2016 14:34

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SAMPLE SUMMARY

Workorder: J1611709 NASA KSC LC39B

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J1611709036	LC39B-MW0016-025.0-20161129	Water	11/29/2016 15:20	12/2/2016 14:34
J1611709037	LC39B-IDW205772-20161201	Water	12/1/2016 10:06	12/2/2016 14:34
J1611709038	LC39B-IDW208269-20161201	Water	12/1/2016 10:02	12/2/2016 14:34
J1611709039	LC39B-IDW208271-20161201	Water	12/1/2016 10:18	12/2/2016 14:34
J1611709040	LC39B-IDW208272-20161201	Water	12/1/2016 10:12	12/2/2016 14:34
J1611709041	LC39B-IDW208278-20161201	Water	12/1/2016 10:54	12/2/2016 14:34
J1611709042	LC39B-IDW208279-20161201	Water	12/1/2016 10:48	12/2/2016 14:34
J1611709043	LC39B-IDW208280-20161201	Water	12/1/2016 11:01	12/2/2016 14:34
J1611709044	LC39B-IDW208281-20161201	Water	12/1/2016 11:10	12/2/2016 14:34
J1611709045	LC39B-IDW208289-20161201	Water	12/1/2016 10:30	12/2/2016 14:34
J1611709046	LC39B-IDW208343-20161201	Water	12/1/2016 10:40	12/2/2016 14:34
J1611709047	LC39B-IDW208282-20161201	Water	12/1/2016 11:13	12/2/2016 14:34
J1611709048	LC39B-MW0036-025.0-20161128	Water	11/28/2016 15:21	12/2/2016 14:34

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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709001** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0031-012.5-20161128** Date Collected: 11/28/16 14:23

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 10:41	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 10:41	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 10:41	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 10:41	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 10:41	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 10:41	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 10:41	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 10:41	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 10:41	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 10:41	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 10:41	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 10:41	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 10:41	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 10:41	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 10:41	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 10:41	J
Trichloroethene	**8.9**		**ug/L**	**1**	1.0	0.29	12/7/2016 10:41	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 10:41	J
cis-1,2-Dichloroethylene	**13**		**ug/L**	**1**	1.0	0.24	12/7/2016 10:41	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 10:41	J
trans-1,2-Dichloroethylene	**1.5**		**ug/L**	**1**	1.0	0.20	12/7/2016 10:41	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 10:41	J
1,2-Dichloroethane-d4 (S)	**103**		**%**	**1**	77-125		12/7/2016 10:41	
Toluene-d8 (S)	**93**		**%**	**1**	80-121		12/7/2016 10:41	
Bromofluorobenzene (S)	**101**		**%**	**1**	80-129		12/7/2016 10:41	

Lab ID: **J1611709002** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0033-041.0-20161128** Date Collected: 11/28/16 13:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								

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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709002** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0033-041.0-20161128** Date Collected: 11/28/16 13:55

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 11:08	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 11:08	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 11:08	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 11:08	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 11:08	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 11:08	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 11:08	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 11:08	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 11:08	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 11:08	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 11:08	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 11:08	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 11:08	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 11:08	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 11:08	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 11:08	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 11:08	J
Vinyl Chloride	**180**		**ug/L**	**3**	3.0	0.60	12/8/2016 12:26	J
cis-1,2-Dichloroethylene	**11**		**ug/L**	**1**	1.0	0.24	12/7/2016 11:08	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 11:08	J
trans-1,2-Dichloroethylene	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 11:08	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 11:08	J
1,2-Dichloroethane-d4 (S)	**105**		**%**	**1**	77-125		12/7/2016 11:08	
Toluene-d8 (S)	**93**		**%**	**1**	80-121		12/7/2016 11:08	
Bromofluorobenzene (S)	**105**		**%**	**1**	80-129		12/7/2016 11:08	

Lab ID: **J1611709003** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0010-027.0-20161128** Date Collected: 11/28/16 13:28

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								

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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709003** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0010-027.0-20161128** Date Collected: 11/28/16 13:28

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 11:35	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 11:35	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 11:35	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 11:35	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 11:35	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 11:35	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 11:35	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 11:35	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 11:35	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 11:35	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 11:35	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 11:35	J
Chloromethane	**0.82**	**I**	**ug/L**	**1**	1.0	0.21	12/7/2016 11:35	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 11:35	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 11:35	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 11:35	J
Trichloroethene	**4.1**		**ug/L**	**1**	1.0	0.29	12/7/2016 11:35	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 11:35	J
cis-1,2-Dichloroethylene	**1.7**		**ug/L**	**1**	1.0	0.24	12/7/2016 11:35	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 11:35	J
trans-1,2-Dichloroethylene	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 11:35	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 11:35	J
1,2-Dichloroethane-d4 (S)	**100**		**%**	**1**	77-125		12/7/2016 11:35	
Toluene-d8 (S)	**97**		**%**	**1**	80-121		12/7/2016 11:35	
Bromofluorobenzene (S)	**107**		**%**	**1**	80-129		12/7/2016 11:35	

Lab ID: **J1611709004** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0011-045.0-20161128** Date Collected: 11/28/16 13:06

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								

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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709004** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0011-045.0-20161128** Date Collected: 11/28/16 13:06

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 12:02	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 12:02	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 12:02	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 12:02	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 12:02	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 12:02	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 12:02	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 12:02	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 12:02	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 12:02	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 12:02	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 12:02	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 12:02	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 12:02	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 12:02	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 12:02	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 12:02	J
Vinyl Chloride	**18**		**ug/L**	**1**	1.0	0.20	12/7/2016 12:02	J
cis-1,2-Dichloroethylene	**1.8**		**ug/L**	**1**	1.0	0.24	12/7/2016 12:02	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 12:02	J
trans-1,2-Dichloroethylene	**15**		**ug/L**	**1**	1.0	0.20	12/7/2016 12:02	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 12:02	J
1,2-Dichloroethane-d4 (S)	**102**		**%**	**1**	77-125		12/7/2016 12:02	
Toluene-d8 (S)	**99**		**%**	**1**	80-121		12/7/2016 12:02	
Bromofluorobenzene (S)	**107**		**%**	**1**	80-129		12/7/2016 12:02	

Lab ID: **J1611709005** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0012-045.0-20161128** Date Collected: 11/28/16 12:41

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709005** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0012-045.0-20161128** Date Collected: 11/28/16 12:41

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 12:29	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 12:29	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 12:29	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 12:29	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 12:29	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 12:29	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 12:29	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 12:29	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 12:29	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 12:29	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 12:29	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 12:29	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 12:29	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 12:29	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 12:29	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 12:29	J
Trichloroethene	**1.6**		**ug/L**	**1**	1.0	0.29	12/7/2016 12:29	J
Vinyl Chloride	**54**		**ug/L**	**1**	1.0	0.20	12/7/2016 12:29	J
cis-1,2-Dichloroethylene	**3.2**		**ug/L**	**1**	1.0	0.24	12/7/2016 12:29	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 12:29	J
trans-1,2-Dichloroethylene	**5.6**		**ug/L**	**1**	1.0	0.20	12/7/2016 12:29	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 12:29	J
1,2-Dichloroethane-d4 (S)	**100**		**%**	**1**	77-125		12/7/2016 12:29	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/7/2016 12:29	
Bromofluorobenzene (S)	**105**		**%**	**1**	80-129		12/7/2016 12:29	

Lab ID: **J1611709006** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0020-045.0-20161128** Date Collected: 11/28/16 12:17

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709006** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0020-045.0-20161128** Date Collected: 11/28/16 12:17

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 12:57	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 12:57	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 12:57	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 12:57	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 12:57	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 12:57	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 12:57	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 12:57	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 12:57	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 12:57	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 12:57	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 12:57	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 12:57	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 12:57	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 12:57	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 12:57	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 12:57	J
Vinyl Chloride	**240**		**ug/L**	**3**	3.0	0.60	12/8/2016 12:53	J
cis-1,2-Dichloroethylene	**4.0**		**ug/L**	**1**	1.0	0.24	12/7/2016 12:57	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 12:57	J
trans-1,2-Dichloroethylene	**1.5**		**ug/L**	**1**	1.0	0.20	12/7/2016 12:57	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 12:57	J
1,2-Dichloroethane-d4 (S)	**106**		**%**	**1**	77-125		12/7/2016 12:57	
Toluene-d8 (S)	**94**		**%**	**1**	80-121		12/7/2016 12:57	
Bromofluorobenzene (S)	**105**		**%**	**1**	80-129		12/7/2016 12:57	

Lab ID: **J1611709007** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0013-021.0-20161128** Date Collected: 11/28/16 11:52

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709007** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0013-021.0-20161128** Date Collected: 11/28/16 11:52

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 13:24	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 13:24	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 13:24	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 13:24	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 13:24	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 13:24	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 13:24	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 13:24	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 13:24	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 13:24	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 13:24	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 13:24	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 13:24	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 13:24	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 13:24	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 13:24	J
Trichloroethene	**550**		**ug/L**	**10**	10	2.9	12/8/2016 13:20	J
Vinyl Chloride	**160**		**ug/L**	**10**	10	2.0	12/8/2016 13:20	J
cis-1,2-Dichloroethylene	**180**		**ug/L**	**10**	10	2.4	12/8/2016 13:20	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 13:24	J
trans-1,2-Dichloroethylene	**28**		**ug/L**	**1**	1.0	0.20	12/7/2016 13:24	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 13:24	J
1,2-Dichloroethane-d4 (S)	**109**		**%**	**1**	77-125		12/7/2016 13:24	
Toluene-d8 (S)	**95**		**%**	**1**	80-121		12/7/2016 13:24	
Bromofluorobenzene (S)	**103**		**%**	**1**	80-129		12/7/2016 13:24	

Lab ID: **J1611709008** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0032-013.0-20161128** Date Collected: 11/28/16 14:54

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709008** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0032-013.0-20161128** Date Collected: 11/28/16 14:54

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 13:51	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 13:51	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 13:51	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 13:51	J
1,1-Dichloroethylene	**2.5**		**ug/L**	**1**	1.0	0.18	12/7/2016 13:51	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 13:51	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 13:51	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 13:51	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 13:51	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 13:51	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 13:51	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 13:51	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 13:51	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 13:51	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 13:51	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 13:51	J
Trichloroethene	**2.4**		**ug/L**	**1**	1.0	0.29	12/7/2016 13:51	J
Vinyl Chloride	**2400**		**ug/L**	**50**	50	10	12/8/2016 13:47	J
cis-1,2-Dichloroethylene	**2900**		**ug/L**	**50**	50	12	12/8/2016 13:47	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 13:51	J
trans-1,2-Dichloroethylene	**240**		**ug/L**	**50**	50	10	12/8/2016 13:47	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 13:51	J
1,2-Dichloroethane-d4 (S)	**100**		**%**	**1**	77-125		12/7/2016 13:51	
Toluene-d8 (S)	**94**		**%**	**1**	80-121		12/7/2016 13:51	
Bromofluorobenzene (S)	**103**		**%**	**1**	80-129		12/7/2016 13:51	

Lab ID: **J1611709009** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0037-031.0-20161130** Date Collected: 11/30/16 15:06

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709009** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0037-031.0-20161130** Date Collected: 11/30/16 15:06

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 14:14	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 14:14	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 14:14	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/8/2016 14:14	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 14:14	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 14:14	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 14:14	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 14:14	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 14:14	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 14:14	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 14:14	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 14:14	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 14:14	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 14:14	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 14:14	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 14:14	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/8/2016 14:14	J
Vinyl Chloride	**31**		**ug/L**	**1**	1.0	0.20	12/8/2016 14:14	J
cis-1,2-Dichloroethylene	**7.6**		**ug/L**	**1**	1.0	0.24	12/8/2016 14:14	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 14:14	J
trans-1,2-Dichloroethylene	**3.5**		**ug/L**	**1**	1.0	0.20	12/8/2016 14:14	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 14:14	J
1,2-Dichloroethane-d4 (S)	**99**		**%**	**1**	77-125		12/8/2016 14:14	
Toluene-d8 (S)	**98**		**%**	**1**	80-121		12/8/2016 14:14	
Bromofluorobenzene (S)	**106**		**%**	**1**	80-129		12/8/2016 14:14	

Lab ID: **J1611709010** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LOX-TA0004S-013.0-20161201** Date Collected: 12/01/16 10:21

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709010** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LOX-TA0004S-013.0-20161201** Date Collected: 12/01/16 10:21

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 15:12	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 15:12	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 15:12	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 15:12	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 15:12	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 15:12	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 15:12	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 15:12	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 15:12	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 15:12	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 15:12	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 15:12	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 15:12	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 15:12	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 15:12	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 15:12	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 15:12	J
Vinyl Chloride	**82**		**ug/L**	**1**	1.0	0.20	12/7/2016 15:12	J
cis-1,2-Dichloroethylene	**3.7**		**ug/L**	**1**	1.0	0.24	12/7/2016 15:12	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 15:12	J
trans-1,2-Dichloroethylene	**1.4**		**ug/L**	**1**	1.0	0.20	12/7/2016 15:12	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 15:12	J
1,2-Dichloroethane-d4 (S)	**104**		**%**	**1**	77-125		12/7/2016 15:12	
Toluene-d8 (S)	**95**		**%**	**1**	80-121		12/7/2016 15:12	
Bromofluorobenzene (S)	**103**		**%**	**1**	80-129		12/7/2016 15:12	

Lab ID: **J1611709011** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0029-035.0-20161130** Date Collected: 11/30/16 14:12

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709011** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0029-035.0-20161130** Date Collected: 11/30/16 14:12

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 15:39	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 15:39	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 15:39	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 15:39	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 15:39	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 15:39	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 15:39	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 15:39	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 15:39	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 15:39	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 15:39	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 15:39	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 15:39	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 15:39	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 15:39	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 15:39	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 15:39	J
Vinyl Chloride	**55**		**ug/L**	**1**	1.0	0.20	12/7/2016 15:39	J
cis-1,2-Dichloroethylene	**5.6**		**ug/L**	**1**	1.0	0.24	12/7/2016 15:39	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 15:39	J
trans-1,2-Dichloroethylene	**1.2**		**ug/L**	**1**	1.0	0.20	12/7/2016 15:39	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 15:39	J
1,2-Dichloroethane-d4 (S)	**103**		**%**	**1**	77-125		12/7/2016 15:39	
Toluene-d8 (S)	**93**		**%**	**1**	80-121		12/7/2016 15:39	
Bromofluorobenzene (S)	**104**		**%**	**1**	80-129		12/7/2016 15:39	

Lab ID: **J1611709012** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0040-017.0-20161201** Date Collected: 12/01/16 12:24

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709012** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0040-017.0-20161201** Date Collected: 12/01/16 12:24

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 16:07	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 16:07	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 16:07	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 16:07	J
1,1-Dichloroethylene	**2.9**		**ug/L**	**1**	1.0	0.18	12/7/2016 16:07	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 16:07	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 16:07	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 16:07	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 16:07	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 16:07	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 16:07	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 16:07	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 16:07	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 16:07	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 16:07	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 16:07	J
Trichloroethene	**62**		**ug/L**	**1**	1.0	0.29	12/7/2016 16:07	J
Vinyl Chloride	**100**		**ug/L**	**1**	1.0	0.20	12/7/2016 16:07	J
cis-1,2-Dichloroethylene	**1500**		**ug/L**	**20**	20	4.8	12/8/2016 14:41	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 16:07	J
trans-1,2-Dichloroethylene	**80**		**ug/L**	**1**	1.0	0.20	12/7/2016 16:07	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 16:07	J
1,2-Dichloroethane-d4 (S)	**102**		**%**	**1**	77-125		12/7/2016 16:07	
Toluene-d8 (S)	**93**		**%**	**1**	80-121		12/7/2016 16:07	
Bromofluorobenzene (S)	**106**		**%**	**1**	80-129		12/7/2016 16:07	

Lab ID: **J1611709013** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0034-013.0--20161130** Date Collected: 11/30/16 16:04

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709013** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0034-013.0--20161130** Date Collected: 11/30/16 16:04

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 16:34	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 16:34	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 16:34	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 16:34	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 16:34	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 16:34	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 16:34	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 16:34	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 16:34	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 16:34	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 16:34	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 16:34	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 16:34	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 16:34	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 16:34	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 16:34	J
Trichloroethene	**1.4**		**ug/L**	**1**	1.0	0.29	12/7/2016 16:34	J
Vinyl Chloride	**100**		**ug/L**	**1**	1.0	0.20	12/7/2016 16:34	J
cis-1,2-Dichloroethylene	**61**		**ug/L**	**1**	1.0	0.24	12/8/2016 15:08	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 16:34	J
trans-1,2-Dichloroethylene	**6.4**		**ug/L**	**1**	1.0	0.20	12/7/2016 16:34	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 16:34	J
1,2-Dichloroethane-d4 (S)	**100**		**%**	**1**	77-125		12/7/2016 16:34	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/7/2016 16:34	
Bromofluorobenzene (S)	**105**		**%**	**1**	80-129		12/7/2016 16:34	

Lab ID: **J1611709014** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0027-045.0--20161130** Date Collected: 11/30/16 12:24

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709014** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0027-045.0--20161130** Date Collected: 11/30/16 12:24

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 17:01	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 17:01	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 17:01	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 17:01	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 17:01	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 17:01	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 17:01	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 17:01	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 17:01	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 17:01	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 17:01	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 17:01	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 17:01	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 17:01	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 17:01	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 17:01	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 17:01	J
Vinyl Chloride	**900**		**ug/L**	**10**	10	2.0	12/8/2016 15:36	J
cis-1,2-Dichloroethylene	**18**		**ug/L**	**1**	1.0	0.24	12/7/2016 17:01	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 17:01	J
trans-1,2-Dichloroethylene	**9.9**		**ug/L**	**1**	1.0	0.20	12/7/2016 17:01	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 17:01	J
1,2-Dichloroethane-d4 (S)	**103**		**%**	**1**	77-125		12/7/2016 17:01	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/7/2016 17:01	
Bromofluorobenzene (S)	**102**		**%**	**1**	80-129		12/7/2016 17:01	

Lab ID: **J1611709015** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0025-045.0-20161130** Date Collected: 11/30/16 11:36

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709015** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0025-045.0-20161130** Date Collected: 11/30/16 11:36

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 17:29	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 17:29	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 17:29	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 17:29	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 17:29	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 17:29	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 17:29	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 17:29	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 17:29	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 17:29	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 17:29	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 17:29	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 17:29	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 17:29	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 17:29	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 17:29	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 17:29	J
Vinyl Chloride	**960**		**ug/L**	**10**	10	2.0	12/8/2016 16:03	J
cis-1,2-Dichloroethylene	**7.2**		**ug/L**	**1**	1.0	0.24	12/7/2016 17:29	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 17:29	J
trans-1,2-Dichloroethylene	**8.9**		**ug/L**	**1**	1.0	0.20	12/7/2016 17:29	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 17:29	J
1,2-Dichloroethane-d4 (S)	**102**		**%**	**1**	77-125		12/7/2016 17:29	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/7/2016 17:29	
Bromofluorobenzene (S)	**105**		**%**	**1**	80-129		12/7/2016 17:29	

Lab ID: **J1611709016** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0023-045.0-20161130** Date Collected: 11/30/16 10:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709016** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0023-045.0-20161130** Date Collected: 11/30/16 10:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.44**	**U**	**ug/L**	**2**	2.0	0.44	12/7/2016 19:17	J
1,1,2,2-Tetrachloroethane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/7/2016 19:17	J
1,1,2-Trichloroethane	**0.60**	**U**	**ug/L**	**2**	2.0	0.60	12/7/2016 19:17	J
1,1-Dichloroethane	**0.28**	**U**	**ug/L**	**2**	2.0	0.28	12/7/2016 19:17	J
1,1-Dichloroethylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/7/2016 19:17	J
1,2-Dichloroethane	**0.46**	**U**	**ug/L**	**2**	2.0	0.46	12/7/2016 19:17	J
1,2-Dichloropropane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/7/2016 19:17	J
Bromodichloromethane	**0.50**	**U**	**ug/L**	**2**	2.0	0.50	12/7/2016 19:17	J
Carbon Tetrachloride	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/7/2016 19:17	J
Chlorobenzene	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/7/2016 19:17	J
Chloroethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/7/2016 19:17	J
Chloroform	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/7/2016 19:17	J
Chloromethane	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/7/2016 19:17	J
Dibromochloromethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/7/2016 19:17	J
Methylene Chloride	**5.0**	**U**	**ug/L**	**2**	10	5.0	12/7/2016 19:17	J
Tetrachloroethylene (PCE)	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/7/2016 19:17	J
Trichloroethene	**0.58**	**U**	**ug/L**	**2**	2.0	0.58	12/7/2016 19:17	J
Vinyl Chloride	**730**		**ug/L**	**10**	10	2.0	12/8/2016 16:30	J
cis-1,2-Dichloroethylene	**7.2**		**ug/L**	**2**	2.0	0.48	12/7/2016 19:17	J
cis-1,3-Dichloropropene	**0.32**	**U**	**ug/L**	**2**	2.0	0.32	12/7/2016 19:17	J
trans-1,2-Dichloroethylene	**5.2**		**ug/L**	**2**	2.0	0.40	12/7/2016 19:17	J
trans-1,3-Dichloropropylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/7/2016 19:17	J
1,2-Dichloroethane-d4 (S)	**101**		**%**	**2**	77-125		12/7/2016 19:17	
Toluene-d8 (S)	**96**		**%**	**2**	80-121		12/7/2016 19:17	
Bromofluorobenzene (S)	**104**		**%**	**2**	80-129		12/7/2016 19:17	

Lab ID: **J1611709017** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0039-011.0-20161201** Date Collected: 12/01/16 12:39

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709017** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0039-011.0-20161201** Date Collected: 12/01/16 12:39

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.66**	**U**	**ug/L**	**3**	3.0	0.66	12/7/2016 19:44	J
1,1,2,2-Tetrachloroethane	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/7/2016 19:44	J
1,1,2-Trichloroethane	**0.90**	**U**	**ug/L**	**3**	3.0	0.90	12/7/2016 19:44	J
1,1-Dichloroethane	**0.42**	**U**	**ug/L**	**3**	3.0	0.42	12/7/2016 19:44	J
1,1-Dichloroethylene	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/7/2016 19:44	J
1,2-Dichloroethane	**0.69**	**U**	**ug/L**	**3**	3.0	0.69	12/7/2016 19:44	J
1,2-Dichloropropane	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/7/2016 19:44	J
Bromodichloromethane	**0.75**	**U**	**ug/L**	**3**	3.0	0.75	12/7/2016 19:44	J
Carbon Tetrachloride	**1.1**	**U**	**ug/L**	**3**	3.0	1.1	12/7/2016 19:44	J
Chlorobenzene	**0.63**	**U**	**ug/L**	**3**	3.0	0.63	12/7/2016 19:44	J
Chloroethane	**0.99**	**U**	**ug/L**	**3**	3.0	0.99	12/7/2016 19:44	J
Chloroform	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/7/2016 19:44	J
Chloromethane	**0.63**	**U**	**ug/L**	**3**	3.0	0.63	12/7/2016 19:44	J
Dibromochloromethane	**0.99**	**U**	**ug/L**	**3**	3.0	0.99	12/7/2016 19:44	J
Methylene Chloride	**7.5**	**U**	**ug/L**	**3**	15	7.5	12/7/2016 19:44	J
Tetrachloroethylene (PCE)	**1.1**	**U**	**ug/L**	**3**	3.0	1.1	12/7/2016 19:44	J
Trichloroethene	**11**		**ug/L**	**3**	3.0	0.87	12/7/2016 19:44	J
Vinyl Chloride	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/7/2016 19:44	J
cis-1,2-Dichloroethylene	**9.0**		**ug/L**	**3**	3.0	0.72	12/7/2016 19:44	J
cis-1,3-Dichloropropene	**0.48**	**U**	**ug/L**	**3**	3.0	0.48	12/7/2016 19:44	J
trans-1,2-Dichloroethylene	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/7/2016 19:44	J
trans-1,3-Dichloropropylene	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/7/2016 19:44	J
1,2-Dichloroethane-d4 (S)	**103**		**%**	**3**	77-125		12/7/2016 19:44	
Toluene-d8 (S)	**98**		**%**	**3**	80-121		12/7/2016 19:44	
Bromofluorobenzene (S)	**105**		**%**	**3**	80-129		12/7/2016 19:44	

Lab ID: **J1611709018** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LOX-TA0002S-013.0-20161201** Date Collected: 12/01/16 12:01

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709018** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LOX-TA0002S-013.0-20161201** Date Collected: 12/01/16 12:01

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.66**	**U**	**ug/L**	**3**	3.0	0.66	12/7/2016 20:11	J
1,1,2,2-Tetrachloroethane	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/7/2016 20:11	J
1,1,2-Trichloroethane	**0.90**	**U**	**ug/L**	**3**	3.0	0.90	12/7/2016 20:11	J
1,1-Dichloroethane	**0.42**	**U**	**ug/L**	**3**	3.0	0.42	12/7/2016 20:11	J
1,1-Dichloroethylene	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/7/2016 20:11	J
1,2-Dichloroethane	**0.69**	**U**	**ug/L**	**3**	3.0	0.69	12/7/2016 20:11	J
1,2-Dichloropropane	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/7/2016 20:11	J
Bromodichloromethane	**0.75**	**U**	**ug/L**	**3**	3.0	0.75	12/7/2016 20:11	J
Carbon Tetrachloride	**1.1**	**U**	**ug/L**	**3**	3.0	1.1	12/7/2016 20:11	J
Chlorobenzene	**0.63**	**U**	**ug/L**	**3**	3.0	0.63	12/7/2016 20:11	J
Chloroethane	**0.99**	**U**	**ug/L**	**3**	3.0	0.99	12/7/2016 20:11	J
Chloroform	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/7/2016 20:11	J
Chloromethane	**0.63**	**U**	**ug/L**	**3**	3.0	0.63	12/7/2016 20:11	J
Dibromochloromethane	**0.99**	**U**	**ug/L**	**3**	3.0	0.99	12/7/2016 20:11	J
Methylene Chloride	**7.5**	**U**	**ug/L**	**3**	15	7.5	12/7/2016 20:11	J
Tetrachloroethylene (PCE)	**1.1**	**U**	**ug/L**	**3**	3.0	1.1	12/7/2016 20:11	J
Trichloroethene	**3.2**		**ug/L**	**3**	3.0	0.87	12/7/2016 20:11	J
Vinyl Chloride	**39**		**ug/L**	**3**	3.0	0.60	12/7/2016 20:11	J
cis-1,2-Dichloroethylene	**16**		**ug/L**	**3**	3.0	0.72	12/7/2016 20:11	J
cis-1,3-Dichloropropene	**0.48**	**U**	**ug/L**	**3**	3.0	0.48	12/7/2016 20:11	J
trans-1,2-Dichloroethylene	**9.0**		**ug/L**	**3**	3.0	0.60	12/7/2016 20:11	J
trans-1,3-Dichloropropylene	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/7/2016 20:11	J
1,2-Dichloroethane-d4 (S)	**99**		**%**	**3**	77-125		12/7/2016 20:11	
Toluene-d8 (S)	**99**		**%**	**3**	80-121		12/7/2016 20:11	
Bromofluorobenzene (S)	**107**		**%**	**3**	80-129		12/7/2016 20:11	

Lab ID: **J1611709019** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **ECS-IW0008I-044.5-20161201** Date Collected: 12/01/16 09:31

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709019** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **ECS-IW0008I-044.5-20161201** Date Collected: 12/01/16 09:31

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 21:05	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 21:05	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 21:05	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 21:05	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 21:05	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 21:05	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 21:05	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 21:05	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 21:05	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 21:05	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 21:05	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 21:05	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 21:05	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 21:05	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 21:05	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 21:05	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 21:05	J
Vinyl Chloride	**170**		**ug/L**	**3**	3.0	0.60	12/8/2016 16:57	J
cis-1,2-Dichloroethylene	**59**		**ug/L**	**1**	1.0	0.24	12/7/2016 21:05	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 21:05	J
trans-1,2-Dichloroethylene	**4.3**		**ug/L**	**1**	1.0	0.20	12/7/2016 21:05	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 21:05	J
1,2-Dichloroethane-d4 (S)	**109**		**%**	**1**	77-125		12/7/2016 21:05	
Toluene-d8 (S)	**93**		**%**	**1**	80-121		12/7/2016 21:05	
Bromofluorobenzene (S)	**107**		**%**	**1**	80-129		12/7/2016 21:05	

Lab ID: **J1611709020** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **ECS-IW0006I-035.0-20161201** Date Collected: 12/01/16 08:56

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709020** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **ECS-IW0006I-035.0-20161201** Date Collected: 12/01/16 08:56

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 21:32	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 21:32	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 21:32	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 21:32	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 21:32	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 21:32	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 21:32	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 21:32	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 21:32	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 21:32	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 21:32	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 21:32	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 21:32	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 21:32	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 21:32	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 21:32	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 21:32	J
Vinyl Chloride	**8.7**		**ug/L**	**1**	1.0	0.20	12/7/2016 21:32	J
cis-1,2-Dichloroethylene	**1.2**		**ug/L**	**1**	1.0	0.24	12/7/2016 21:32	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 21:32	J
trans-1,2-Dichloroethylene	**3.4**		**ug/L**	**1**	1.0	0.20	12/7/2016 21:32	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 21:32	J
1,2-Dichloroethane-d4 (S)	**105**		**%**	**1**	77-125		12/7/2016 21:32	
Toluene-d8 (S)	**95**		**%**	**1**	80-121		12/7/2016 21:32	
Bromofluorobenzene (S)	**107**		**%**	**1**	80-129		12/7/2016 21:32	

Lab ID: **J1611709021** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **ECS-IW0004I-044.0-20161201** Date Collected: 12/01/16 08:23

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709021** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **ECS-IW0004I-044.0-20161201** Date Collected: 12/01/16 08:23

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 22:00	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 22:00	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 22:00	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 22:00	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 22:00	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 22:00	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 22:00	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 22:00	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 22:00	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 22:00	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 22:00	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 22:00	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 22:00	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 22:00	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 22:00	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 22:00	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 22:00	J
Vinyl Chloride	**20**		**ug/L**	**1**	1.0	0.20	12/7/2016 22:00	J
cis-1,2-Dichloroethylene	**1.4**		**ug/L**	**1**	1.0	0.24	12/7/2016 22:00	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 22:00	J
trans-1,2-Dichloroethylene	**6.6**		**ug/L**	**1**	1.0	0.20	12/7/2016 22:00	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 22:00	J
1,2-Dichloroethane-d4 (S)	**104**		**%**	**1**	77-125		12/7/2016 22:00	
Toluene-d8 (S)	**95**		**%**	**1**	80-121		12/7/2016 22:00	
Bromofluorobenzene (S)	**106**		**%**	**1**	80-129		12/7/2016 22:00	

Lab ID: **J1611709022** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **ECS-IW0005I-044.5-20161201** Date Collected: 12/01/16 07:56

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709022** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **ECS-IW0005I-044.5-20161201** Date Collected: 12/01/16 07:56

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 22:27	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 22:27	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 22:27	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 22:27	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 22:27	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 22:27	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 22:27	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 22:27	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 22:27	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 22:27	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 22:27	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 22:27	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 22:27	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 22:27	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 22:27	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 22:27	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 22:27	J
Vinyl Chloride	**170**		**ug/L**	**3**	3.0	0.60	12/8/2016 18:45	J
cis-1,2-Dichloroethylene	**1.6**		**ug/L**	**1**	1.0	0.24	12/7/2016 22:27	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 22:27	J
trans-1,2-Dichloroethylene	**6.3**		**ug/L**	**1**	1.0	0.20	12/7/2016 22:27	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 22:27	J
1,2-Dichloroethane-d4 (S)	**100**		**%**	**1**	77-125		12/7/2016 22:27	
Toluene-d8 (S)	**97**		**%**	**1**	80-121		12/7/2016 22:27	
Bromofluorobenzene (S)	**110**		**%**	**1**	80-129		12/7/2016 22:27	

Lab ID: **J1611709023** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0028-045.0-20161130** Date Collected: 11/30/16 16:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709023** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0028-045.0-20161130** Date Collected: 11/30/16 16:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 22:54	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 22:54	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 22:54	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 22:54	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 22:54	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 22:54	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 22:54	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 22:54	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 22:54	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 22:54	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 22:54	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 22:54	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 22:54	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 22:54	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 22:54	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 22:54	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/7/2016 22:54	J
Vinyl Chloride	**260**		**ug/L**	**5**	5.0	1.0	12/8/2016 19:12	J
cis-1,2-Dichloroethylene	**5.8**		**ug/L**	**1**	1.0	0.24	12/7/2016 22:54	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 22:54	J
trans-1,2-Dichloroethylene	**2.8**		**ug/L**	**1**	1.0	0.20	12/7/2016 22:54	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 22:54	J
1,2-Dichloroethane-d4 (S)	**104**		**%**	**1**	77-125		12/7/2016 22:54	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/7/2016 22:54	
Bromofluorobenzene (S)	**106**		**%**	**1**	80-129		12/7/2016 22:54	

Lab ID: **J1611709024** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0035-023.0-20161130** Date Collected: 11/30/16 15:49

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709024** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0035-023.0-20161130** Date Collected: 11/30/16 15:49

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/7/2016 23:21	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 23:21	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/7/2016 23:21	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/7/2016 23:21	J
1,1-Dichloroethylene	**1.7**		**ug/L**	**1**	1.0	0.18	12/7/2016 23:21	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/7/2016 23:21	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/7/2016 23:21	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/7/2016 23:21	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 23:21	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/7/2016 23:21	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 23:21	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 23:21	J
Chloromethane	**0.54**	**I**	**ug/L**	**1**	1.0	0.21	12/7/2016 23:21	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/7/2016 23:21	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/7/2016 23:21	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/7/2016 23:21	J
Trichloroethene	**13**		**ug/L**	**1**	1.0	0.29	12/7/2016 23:21	J
Vinyl Chloride	**690**		**ug/L**	**10**	10	2.0	12/8/2016 19:39	J
cis-1,2-Dichloroethylene	**770**		**ug/L**	**10**	10	2.4	12/8/2016 19:39	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/7/2016 23:21	J
trans-1,2-Dichloroethylene	**64**		**ug/L**	**1**	1.0	0.20	12/7/2016 23:21	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/7/2016 23:21	J
1,2-Dichloroethane-d4 (S)	**104**		**%**	**1**	77-125		12/7/2016 23:21	
Toluene-d8 (S)	**95**		**%**	**1**	80-121		12/7/2016 23:21	
Bromofluorobenzene (S)	**107**		**%**	**1**	80-129		12/7/2016 23:21	

Lab ID: **J1611709025** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0038-041.0-20161130** Date Collected: 11/30/16 14:48

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709025** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0038-041.0-20161130** Date Collected: 11/30/16 14:48

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 20:06	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 20:06	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 20:06	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/8/2016 20:06	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 20:06	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 20:06	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 20:06	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 20:06	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 20:06	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 20:06	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 20:06	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 20:06	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 20:06	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 20:06	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 20:06	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 20:06	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/8/2016 20:06	J
Vinyl Chloride	**6.2**		**ug/L**	**1**	1.0	0.20	12/8/2016 20:06	J
cis-1,2-Dichloroethylene	**6.7**		**ug/L**	**1**	1.0	0.24	12/8/2016 20:06	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 20:06	J
trans-1,2-Dichloroethylene	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 20:06	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 20:06	J
1,2-Dichloroethane-d4 (S)	**106**		**%**	**1**	77-125		12/8/2016 20:06	
Toluene-d8 (S)	**94**		**%**	**1**	80-121		12/8/2016 20:06	
Bromofluorobenzene (S)	**108**		**%**	**1**	80-129		12/8/2016 20:06	

Lab ID: **J1611709026** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0030-045.0-20161130** Date Collected: 11/30/16 14:06

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709026** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0030-045.0-20161130** Date Collected: 11/30/16 14:06

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 00:15	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 00:15	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 00:15	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/8/2016 00:15	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 00:15	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 00:15	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 00:15	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 00:15	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 00:15	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 00:15	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 00:15	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 00:15	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 00:15	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 00:15	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 00:15	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 00:15	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/8/2016 00:15	J
Vinyl Chloride	**130**		**ug/L**	**1**	1.0	0.20	12/8/2016 00:15	J
cis-1,2-Dichloroethylene	**18**		**ug/L**	**1**	1.0	0.24	12/8/2016 00:15	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 00:15	J
trans-1,2-Dichloroethylene	**2.0**		**ug/L**	**1**	1.0	0.20	12/8/2016 00:15	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 00:15	J
1,2-Dichloroethane-d4 (S)	**109**		**%**	**1**	77-125		12/8/2016 00:15	
Toluene-d8 (S)	**93**		**%**	**1**	80-121		12/8/2016 00:15	
Bromofluorobenzene (S)	**103**		**%**	**1**	80-129		12/8/2016 00:15	

Lab ID: **J1611709027** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0026-035.0-20161130** Date Collected: 11/30/16 12:17

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709027** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0026-035.0-20161130** Date Collected: 11/30/16 12:17

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 00:42	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 00:42	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 00:42	J
1,1-Dichloroethane	**0.90**	**I**	**ug/L**	**1**	1.0	0.14	12/8/2016 00:42	J
1,1-Dichloroethylene	**1.6**		**ug/L**	**1**	1.0	0.18	12/8/2016 00:42	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 00:42	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 00:42	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 00:42	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 00:42	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 00:42	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 00:42	J
Chloroform	**1.3**		**ug/L**	**1**	1.0	0.18	12/8/2016 00:42	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 00:42	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 00:42	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 00:42	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 00:42	J
Trichloroethene	**230**		**ug/L**	**10**	10	2.9	12/8/2016 20:33	J
Vinyl Chloride	**210**		**ug/L**	**10**	10	2.0	12/8/2016 20:33	J
cis-1,2-Dichloroethylene	**430**		**ug/L**	**10**	10	2.4	12/8/2016 20:33	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 00:42	J
trans-1,2-Dichloroethylene	**59**		**ug/L**	**1**	1.0	0.20	12/8/2016 00:42	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 00:42	J
1,2-Dichloroethane-d4 (S)	**102**		**%**	**1**	77-125		12/8/2016 00:42	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/8/2016 00:42	
Bromofluorobenzene (S)	**109**		**%**	**1**	80-129		12/8/2016 00:42	

Lab ID: **J1611709028** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0022-035.0-20161129** Date Collected: 11/29/16 10:29

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709028** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0022-035.0-20161129** Date Collected: 11/29/16 10:29

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 21:00	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 21:00	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 21:00	J
1,1-Dichloroethane	**2.1**		**ug/L**	**1**	1.0	0.14	12/8/2016 21:00	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 21:00	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 21:00	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 21:00	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 21:00	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 21:00	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 21:00	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 21:00	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 21:00	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 21:00	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 21:00	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 21:00	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 21:00	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/8/2016 21:00	J
Vinyl Chloride	**190**		**ug/L**	**1**	1.0	0.20	12/8/2016 21:00	J
cis-1,2-Dichloroethylene	**2.1**		**ug/L**	**1**	1.0	0.24	12/8/2016 21:00	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 21:00	J
trans-1,2-Dichloroethylene	**10**		**ug/L**	**1**	1.0	0.20	12/8/2016 21:00	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 21:00	J
1,2-Dichloroethane-d4 (S)	**105**		**%**	**1**	77-125		12/8/2016 21:00	
Toluene-d8 (S)	**93**		**%**	**1**	80-121		12/8/2016 21:00	
Bromofluorobenzene (S)	**107**		**%**	**1**	80-129		12/8/2016 21:00	

Lab ID: **J1611709029** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0024-035.0-20161130** Date Collected: 11/30/16 11:26

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709029** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0024-035.0-20161130** Date Collected: 11/30/16 11:26

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 01:36	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 01:36	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 01:36	J
1,1-Dichloroethane	**1.3**		**ug/L**	**1**	1.0	0.14	12/8/2016 01:36	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 01:36	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 01:36	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 01:36	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 01:36	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 01:36	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 01:36	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 01:36	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 01:36	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 01:36	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 01:36	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 01:36	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 01:36	J
Trichloroethene	**1.7**		**ug/L**	**1**	1.0	0.29	12/8/2016 01:36	J
Vinyl Chloride	**83**		**ug/L**	**1**	1.0	0.20	12/8/2016 01:36	J
cis-1,2-Dichloroethylene	**3.3**		**ug/L**	**1**	1.0	0.24	12/8/2016 01:36	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 01:36	J
trans-1,2-Dichloroethylene	**15**		**ug/L**	**1**	1.0	0.20	12/8/2016 01:36	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 01:36	J
1,2-Dichloroethane-d4 (S)	**99**		**%**	**1**	77-125		12/8/2016 01:36	
Toluene-d8 (S)	**98**		**%**	**1**	80-121		12/8/2016 01:36	
Bromofluorobenzene (S)	**107**		**%**	**1**	80-129		12/8/2016 01:36	

Lab ID: **J1611709030** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0021-025.0-20161130** Date Collected: 11/30/16 10:46

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709030** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0021-025.0-20161130** Date Collected: 11/30/16 10:46

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 02:03	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 02:03	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 02:03	J
1,1-Dichloroethane	**0.67**	**I**	**ug/L**	**1**	1.0	0.14	12/8/2016 02:03	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 02:03	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 02:03	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 02:03	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 02:03	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 02:03	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 02:03	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 02:03	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 02:03	J
Chloromethane	**0.26**	**I**	**ug/L**	**1**	1.0	0.21	12/8/2016 02:03	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 02:03	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 02:03	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 02:03	J
Trichloroethene	**2.1**		**ug/L**	**1**	1.0	0.29	12/8/2016 02:03	J
Vinyl Chloride	**140**		**ug/L**	**1**	1.0	0.20	12/8/2016 02:03	J
cis-1,2-Dichloroethylene	**7.4**		**ug/L**	**1**	1.0	0.24	12/8/2016 02:03	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 02:03	J
trans-1,2-Dichloroethylene	**1.8**		**ug/L**	**1**	1.0	0.20	12/8/2016 02:03	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 02:03	J
1,2-Dichloroethane-d4 (S)	**99**		**%**	**1**	77-125		12/8/2016 02:03	
Toluene-d8 (S)	**98**		**%**	**1**	80-121		12/8/2016 02:03	
Bromofluorobenzene (S)	**113**		**%**	**1**	80-129		12/8/2016 02:03	

Lab ID: **J1611709031** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0017-035.0-20161129** Date Collected: 11/29/16 15:22

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709031** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0017-035.0-20161129** Date Collected: 11/29/16 15:22

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.44**	**U**	**ug/L**	**2**	2.0	0.44	12/8/2016 02:30	J
1,1,2,2-Tetrachloroethane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 02:30	J
1,1,2-Trichloroethane	**0.60**	**U**	**ug/L**	**2**	2.0	0.60	12/8/2016 02:30	J
1,1-Dichloroethane	**0.28**	**U**	**ug/L**	**2**	2.0	0.28	12/8/2016 02:30	J
1,1-Dichloroethylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 02:30	J
1,2-Dichloroethane	**0.46**	**U**	**ug/L**	**2**	2.0	0.46	12/8/2016 02:30	J
1,2-Dichloropropane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 02:30	J
Bromodichloromethane	**0.50**	**U**	**ug/L**	**2**	2.0	0.50	12/8/2016 02:30	J
Carbon Tetrachloride	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/8/2016 02:30	J
Chlorobenzene	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/8/2016 02:30	J
Chloroethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/8/2016 02:30	J
Chloroform	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 02:30	J
Chloromethane	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/8/2016 02:30	J
Dibromochloromethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/8/2016 02:30	J
Methylene Chloride	**5.0**	**U**	**ug/L**	**2**	10	5.0	12/8/2016 02:30	J
Tetrachloroethylene (PCE)	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/8/2016 02:30	J
Trichloroethene	**2.7**		**ug/L**	**2**	2.0	0.58	12/8/2016 02:30	J
Vinyl Chloride	**620**		**ug/L**	**10**	10	2.0	12/8/2016 21:27	J
cis-1,2-Dichloroethylene	**3.4**		**ug/L**	**2**	2.0	0.48	12/8/2016 02:30	J
cis-1,3-Dichloropropene	**0.32**	**U**	**ug/L**	**2**	2.0	0.32	12/8/2016 02:30	J
trans-1,2-Dichloroethylene	**3.5**		**ug/L**	**2**	2.0	0.40	12/8/2016 02:30	J
trans-1,3-Dichloropropylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 02:30	J
1,2-Dichloroethane-d4 (S)	**103**		**%**	**2**	77-125		12/8/2016 02:30	
Toluene-d8 (S)	**100**		**%**	**2**	80-121		12/8/2016 02:30	
Bromofluorobenzene (S)	**109**		**%**	**2**	80-129		12/8/2016 02:30	

Lab ID: **J1611709032** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0015-031.0-20161129** Date Collected: 11/29/16 13:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709032** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0015-031.0-20161129** Date Collected: 11/29/16 13:50

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 02:57	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 02:57	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 02:57	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/8/2016 02:57	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 02:57	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 02:57	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 02:57	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 02:57	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 02:57	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 02:57	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 02:57	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 02:57	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 02:57	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 02:57	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 02:57	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 02:57	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/8/2016 02:57	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 02:57	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	12/8/2016 02:57	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 02:57	J
trans-1,2-Dichloroethylene	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 02:57	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 02:57	J
1,2-Dichloroethane-d4 (S)	**104**		**%**	**1**	77-125		12/8/2016 02:57	
Toluene-d8 (S)	**95**		**%**	**1**	80-121		12/8/2016 02:57	
Bromofluorobenzene (S)	**105**		**%**	**1**	80-129		12/8/2016 02:57	

Lab ID: **J1611709033** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0014-021.0-20161129** Date Collected: 11/29/16 14:31

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709033** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0014-021.0-20161129** Date Collected: 11/29/16 14:31

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 03:24	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 03:24	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 03:24	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/8/2016 03:24	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 03:24	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 03:24	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 03:24	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 03:24	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 03:24	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 03:24	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 03:24	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 03:24	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 03:24	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 03:24	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 03:24	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 03:24	J
Trichloroethene	**4.0**		**ug/L**	**1**	1.0	0.29	12/8/2016 03:24	J
Vinyl Chloride	**150**		**ug/L**	**3**	3.0	0.60	12/8/2016 21:54	J
cis-1,2-Dichloroethylene	**3.6**		**ug/L**	**1**	1.0	0.24	12/8/2016 03:24	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 03:24	J
trans-1,2-Dichloroethylene	**3.7**		**ug/L**	**1**	1.0	0.20	12/8/2016 03:24	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 03:24	J
1,2-Dichloroethane-d4 (S)	**107**		**%**	**1**	77-125		12/8/2016 03:24	
Toluene-d8 (S)	**95**		**%**	**1**	80-121		12/8/2016 03:24	
Bromofluorobenzene (S)	**104**		**%**	**1**	80-129		12/8/2016 03:24	

Lab ID: **J1611709034** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0019-035.0-20161129** Date Collected: 11/29/16 16:27

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709034** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0019-035.0-20161129** Date Collected: 11/29/16 16:27

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 03:52	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 03:52	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 03:52	J
1,1-Dichloroethane	**0.70**	**I**	**ug/L**	**1**	1.0	0.14	12/8/2016 03:52	J
1,1-Dichloroethylene	**1.1**		**ug/L**	**1**	1.0	0.18	12/8/2016 03:52	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 03:52	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 03:52	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 03:52	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 03:52	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 03:52	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 03:52	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 03:52	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 03:52	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 03:52	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 03:52	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 03:52	J
Trichloroethene	**27**		**ug/L**	**1**	1.0	0.29	12/8/2016 03:52	J
Vinyl Chloride	**1500**		**ug/L**	**20**	20	4.0	12/8/2016 22:21	J
cis-1,2-Dichloroethylene	**140**		**ug/L**	**1**	1.0	0.24	12/8/2016 03:52	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 03:52	J
trans-1,2-Dichloroethylene	**51**		**ug/L**	**1**	1.0	0.20	12/8/2016 03:52	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 03:52	J
1,2-Dichloroethane-d4 (S)	**98**		**%**	**1**	77-125		12/8/2016 03:52	
Toluene-d8 (S)	**97**		**%**	**1**	80-121		12/8/2016 03:52	
Bromofluorobenzene (S)	**109**		**%**	**1**	80-129		12/8/2016 03:52	

Lab ID: **J1611709035** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0018-025.0-20161129** Date Collected: 11/29/16 16:12

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709035** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0018-025.0-20161129** Date Collected: 11/29/16 16:12

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 04:19	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 04:19	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 04:19	J
1,1-Dichloroethane	**0.57**	**I**	**ug/L**	**1**	1.0	0.14	12/8/2016 04:19	J
1,1-Dichloroethylene	**13**		**ug/L**	**1**	1.0	0.18	12/8/2016 04:19	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 04:19	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 04:19	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 04:19	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 04:19	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 04:19	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 04:19	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 04:19	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 04:19	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 04:19	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 04:19	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 04:19	J
Trichloroethene	**1400**		**ug/L**	**20**	20	5.8	12/8/2016 22:48	J
Vinyl Chloride	**960**		**ug/L**	**20**	20	4.0	12/8/2016 22:48	J
cis-1,2-Dichloroethylene	**640**		**ug/L**	**20**	20	4.8	12/8/2016 22:48	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 04:19	J
trans-1,2-Dichloroethylene	**46**		**ug/L**	**1**	1.0	0.20	12/8/2016 04:19	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 04:19	J
1,2-Dichloroethane-d4 (S)	**102**		**%**	**1**	77-125		12/8/2016 04:19	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/8/2016 04:19	
Bromofluorobenzene (S)	**109**		**%**	**1**	80-129		12/8/2016 04:19	

Lab ID: **J1611709036** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0016-025.0-20161129** Date Collected: 11/29/16 15:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709036** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0016-025.0-20161129** Date Collected: 11/29/16 15:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 04:46	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 04:46	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 04:46	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/8/2016 04:46	J
1,1-Dichloroethylene	**0.66**	**I**	**ug/L**	**1**	1.0	0.18	12/8/2016 04:46	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 04:46	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 04:46	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 04:46	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 04:46	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 04:46	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 04:46	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 04:46	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 04:46	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 04:46	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 04:46	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 04:46	J
Trichloroethene	**410**		**ug/L**	**2**	2.0	0.58	12/8/2016 23:15	J
Vinyl Chloride	**97**		**ug/L**	**2**	2.0	0.40	12/8/2016 23:15	J
cis-1,2-Dichloroethylene	**160**		**ug/L**	**2**	2.0	0.48	12/8/2016 23:15	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 04:46	J
trans-1,2-Dichloroethylene	**19**		**ug/L**	**1**	1.0	0.20	12/8/2016 04:46	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 04:46	J
1,2-Dichloroethane-d4 (S)	**103**		**%**	**1**	77-125		12/8/2016 04:46	
Toluene-d8 (S)	**95**		**%**	**1**	80-121		12/8/2016 04:46	
Bromofluorobenzene (S)	**106**		**%**	**1**	80-129		12/8/2016 04:46	

Lab ID: **J1611709037** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW205772-20161201** Date Collected: 12/01/16 10:06

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709037** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW205772-20161201** Date Collected: 12/01/16 10:06

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 23:42	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 23:42	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 23:42	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/8/2016 23:42	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 23:42	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 23:42	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 23:42	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 23:42	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 23:42	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 23:42	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 23:42	J
Chloroform	**1.2**		**ug/L**	**1**	1.0	0.18	12/8/2016 23:42	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 23:42	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 23:42	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 23:42	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 23:42	J
Trichloroethene	**2.1**		**ug/L**	**1**	1.0	0.29	12/8/2016 23:42	J
Vinyl Chloride	**9.7**		**ug/L**	**1**	1.0	0.20	12/8/2016 23:42	J
cis-1,2-Dichloroethylene	**1.6**		**ug/L**	**1**	1.0	0.24	12/8/2016 23:42	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 23:42	J
trans-1,2-Dichloroethylene	**2.9**		**ug/L**	**1**	1.0	0.20	12/8/2016 23:42	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 23:42	J
1,2-Dichloroethane-d4 (S)	**98**		**%**	**1**	77-125		12/8/2016 23:42	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/8/2016 23:42	
Bromofluorobenzene (S)	**109**		**%**	**1**	80-129		12/8/2016 23:42	

Lab ID: **J1611709038** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208269-20161201** Date Collected: 12/01/16 10:02

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709038** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208269-20161201** Date Collected: 12/01/16 10:02

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 07:28	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 07:28	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 07:28	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/8/2016 07:28	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 07:28	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 07:28	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 07:28	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 07:28	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 07:28	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 07:28	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 07:28	J
Chloroform	**0.87**	**I**	**ug/L**	**1**	1.0	0.18	12/8/2016 07:28	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 07:28	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 07:28	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 07:28	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 07:28	J
Trichloroethene	**200**		**ug/L**	**3**	3.0	0.87	12/9/2016 00:09	J
Vinyl Chloride	**95**		**ug/L**	**1**	1.0	0.20	12/8/2016 07:28	J
cis-1,2-Dichloroethylene	**94**		**ug/L**	**1**	1.0	0.24	12/8/2016 07:28	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 07:28	J
trans-1,2-Dichloroethylene	**11**		**ug/L**	**1**	1.0	0.20	12/8/2016 07:28	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 07:28	J
1,2-Dichloroethane-d4 (S)	**106**		**%**	**1**	77-125		12/8/2016 07:28	
Toluene-d8 (S)	**95**		**%**	**1**	80-121		12/8/2016 07:28	
Bromofluorobenzene (S)	**104**		**%**	**1**	80-129		12/8/2016 07:28	

Lab ID: **J1611709039** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208271-20161201** Date Collected: 12/01/16 10:18

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709039** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208271-20161201** Date Collected: 12/01/16 10:18

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/8/2016 07:55	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 07:55	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/8/2016 07:55	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/8/2016 07:55	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 07:55	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/8/2016 07:55	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/8/2016 07:55	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/8/2016 07:55	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 07:55	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 07:55	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 07:55	J
Chloroform	**0.66**	**I**	**ug/L**	**1**	1.0	0.18	12/8/2016 07:55	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/8/2016 07:55	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/8/2016 07:55	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/8/2016 07:55	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/8/2016 07:55	J
Trichloroethene	**64**		**ug/L**	**1**	1.0	0.29	12/8/2016 07:55	J
Vinyl Chloride	**15**		**ug/L**	**1**	1.0	0.20	12/8/2016 07:55	J
cis-1,2-Dichloroethylene	**25**		**ug/L**	**1**	1.0	0.24	12/8/2016 07:55	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/8/2016 07:55	J
trans-1,2-Dichloroethylene	**2.0**		**ug/L**	**1**	1.0	0.20	12/8/2016 07:55	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/8/2016 07:55	J
1,2-Dichloroethane-d4 (S)	**100**		**%**	**1**	77-125		12/8/2016 07:55	
Toluene-d8 (S)	**97**		**%**	**1**	80-121		12/8/2016 07:55	
Bromofluorobenzene (S)	**106**		**%**	**1**	80-129		12/8/2016 07:55	

Lab ID: **J1611709040** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208272-20161201** Date Collected: 12/01/16 10:12

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709040** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208272-20161201** Date Collected: 12/01/16 10:12

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.66**	**U**	**ug/L**	**3**	3.0	0.66	12/8/2016 08:22	J
1,1,2,2-Tetrachloroethane	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/8/2016 08:22	J
1,1,2-Trichloroethane	**0.90**	**U**	**ug/L**	**3**	3.0	0.90	12/8/2016 08:22	J
1,1-Dichloroethane	**0.42**	**U**	**ug/L**	**3**	3.0	0.42	12/8/2016 08:22	J
1,1-Dichloroethylene	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/8/2016 08:22	J
1,2-Dichloroethane	**0.69**	**U**	**ug/L**	**3**	3.0	0.69	12/8/2016 08:22	J
1,2-Dichloropropane	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/8/2016 08:22	J
Bromodichloromethane	**0.75**	**U**	**ug/L**	**3**	3.0	0.75	12/8/2016 08:22	J
Carbon Tetrachloride	**1.1**	**U**	**ug/L**	**3**	3.0	1.1	12/8/2016 08:22	J
Chlorobenzene	**0.63**	**U**	**ug/L**	**3**	3.0	0.63	12/8/2016 08:22	J
Chloroethane	**0.99**	**U**	**ug/L**	**3**	3.0	0.99	12/8/2016 08:22	J
Chloroform	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/8/2016 08:22	J
Chloromethane	**0.63**	**U**	**ug/L**	**3**	3.0	0.63	12/8/2016 08:22	J
Dibromochloromethane	**0.99**	**U**	**ug/L**	**3**	3.0	0.99	12/8/2016 08:22	J
Methylene Chloride	**7.5**	**U**	**ug/L**	**3**	15	7.5	12/8/2016 08:22	J
Tetrachloroethylene (PCE)	**1.1**	**U**	**ug/L**	**3**	3.0	1.1	12/8/2016 08:22	J
Trichloroethene	**110**		**ug/L**	**3**	3.0	0.87	12/8/2016 08:22	J
Vinyl Chloride	**160**		**ug/L**	**3**	3.0	0.60	12/8/2016 08:22	J
cis-1,2-Dichloroethylene	**68**		**ug/L**	**3**	3.0	0.72	12/8/2016 08:22	J
cis-1,3-Dichloropropene	**0.48**	**U**	**ug/L**	**3**	3.0	0.48	12/8/2016 08:22	J
trans-1,2-Dichloroethylene	**7.9**		**ug/L**	**3**	3.0	0.60	12/8/2016 08:22	J
trans-1,3-Dichloropropylene	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/8/2016 08:22	J
1,2-Dichloroethane-d4 (S)	**99**		**%**	**3**	77-125		12/8/2016 08:22	
Toluene-d8 (S)	**97**		**%**	**3**	80-121		12/8/2016 08:22	
Bromofluorobenzene (S)	**108**		**%**	**3**	80-129		12/8/2016 08:22	

Lab ID: **J1611709041** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208278-20161201** Date Collected: 12/01/16 10:54

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709041** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208278-20161201** Date Collected: 12/01/16 10:54

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.44**	**U**	**ug/L**	**2**	2.0	0.44	12/8/2016 08:50	J
1,1,2,2-Tetrachloroethane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 08:50	J
1,1,2-Trichloroethane	**0.60**	**U**	**ug/L**	**2**	2.0	0.60	12/8/2016 08:50	J
1,1-Dichloroethane	**0.28**	**U**	**ug/L**	**2**	2.0	0.28	12/8/2016 08:50	J
1,1-Dichloroethylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 08:50	J
1,2-Dichloroethane	**0.46**	**U**	**ug/L**	**2**	2.0	0.46	12/8/2016 08:50	J
1,2-Dichloropropane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 08:50	J
Bromodichloromethane	**0.50**	**U**	**ug/L**	**2**	2.0	0.50	12/8/2016 08:50	J
Carbon Tetrachloride	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/8/2016 08:50	J
Chlorobenzene	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/8/2016 08:50	J
Chloroethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/8/2016 08:50	J
Chloroform	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 08:50	J
Chloromethane	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/8/2016 08:50	J
Dibromochloromethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/8/2016 08:50	J
Methylene Chloride	**5.0**	**U**	**ug/L**	**2**	10	5.0	12/8/2016 08:50	J
Tetrachloroethylene (PCE)	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/8/2016 08:50	J
Trichloroethene	**0.58**	**U**	**ug/L**	**2**	2.0	0.58	12/8/2016 08:50	J
Vinyl Chloride	**23**		**ug/L**	**2**	2.0	0.40	12/8/2016 08:50	J
cis-1,2-Dichloroethylene	**0.48**	**U**	**ug/L**	**2**	2.0	0.48	12/8/2016 08:50	J
cis-1,3-Dichloropropene	**0.32**	**U**	**ug/L**	**2**	2.0	0.32	12/8/2016 08:50	J
trans-1,2-Dichloroethylene	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 08:50	J
trans-1,3-Dichloropropylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 08:50	J
1,2-Dichloroethane-d4 (S)	**99**		**%**	**2**	77-125		12/8/2016 08:50	
Toluene-d8 (S)	**99**		**%**	**2**	80-121		12/8/2016 08:50	
Bromofluorobenzene (S)	**108**		**%**	**2**	80-129		12/8/2016 08:50	

Lab ID: **J1611709042** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208279-20161201** Date Collected: 12/01/16 10:48

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709042** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208279-20161201** Date Collected: 12/01/16 10:48

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/5/2016 20:11	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/5/2016 20:11	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/5/2016 20:11	J
1,1-Dichloroethane	**0.56**	**I**	**ug/L**	**1**	1.0	0.14	12/5/2016 20:11	J
1,1-Dichloroethylene	**0.69**	**I**	**ug/L**	**1**	1.0	0.18	12/5/2016 20:11	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/5/2016 20:11	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/5/2016 20:11	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/5/2016 20:11	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/5/2016 20:11	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/5/2016 20:11	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/5/2016 20:11	J
Chloroform	**1.2**		**ug/L**	**1**	1.0	0.18	12/5/2016 20:11	J
Chloromethane	**1.2**		**ug/L**	**1**	1.0	0.21	12/5/2016 20:11	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/5/2016 20:11	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/5/2016 20:11	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/5/2016 20:11	J
Trichloroethene	**100**		**ug/L**	**1**	1.0	0.29	12/5/2016 20:11	J
Vinyl Chloride	**190**		**ug/L**	**3**	3.0	0.60	12/6/2016 14:50	J
cis-1,2-Dichloroethylene	**61**		**ug/L**	**1**	1.0	0.24	12/5/2016 20:11	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/5/2016 20:11	J
trans-1,2-Dichloroethylene	**10**		**ug/L**	**1**	1.0	0.20	12/5/2016 20:11	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/5/2016 20:11	J
1,2-Dichloroethane-d4 (S)	**112**		**%**	**1**	77-125		12/5/2016 20:11	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/5/2016 20:11	
Bromofluorobenzene (S)	**102**		**%**	**1**	80-129		12/5/2016 20:11	

Lab ID: **J1611709043** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208280-20161201** Date Collected: 12/01/16 11:01

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709043** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208280-20161201** Date Collected: 12/01/16 11:01

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	12/5/2016 20:39	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/5/2016 20:39	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	12/5/2016 20:39	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	12/5/2016 20:39	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/5/2016 20:39	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	12/5/2016 20:39	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	12/5/2016 20:39	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	12/5/2016 20:39	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/5/2016 20:39	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	12/5/2016 20:39	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/5/2016 20:39	J
Chloroform	**0.71**	**I**	**ug/L**	**1**	1.0	0.18	12/5/2016 20:39	J
Chloromethane	**1.7**		**ug/L**	**1**	1.0	0.21	12/5/2016 20:39	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	12/5/2016 20:39	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	12/5/2016 20:39	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	12/5/2016 20:39	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	12/5/2016 20:39	J
Vinyl Chloride	**200**		**ug/L**	**3**	3.0	0.60	12/6/2016 15:17	J
cis-1,2-Dichloroethylene	**4.7**		**ug/L**	**1**	1.0	0.24	12/5/2016 20:39	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	12/5/2016 20:39	J
trans-1,2-Dichloroethylene	**2.4**		**ug/L**	**1**	1.0	0.20	12/5/2016 20:39	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	12/5/2016 20:39	J
1,2-Dichloroethane-d4 (S)	**113**		**%**	**1**	77-125		12/5/2016 20:39	
Toluene-d8 (S)	**96**		**%**	**1**	80-121		12/5/2016 20:39	
Bromofluorobenzene (S)	**103**		**%**	**1**	80-129		12/5/2016 20:39	

Lab ID: **J1611709044** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208281-20161201** Date Collected: 12/01/16 11:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709044** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208281-20161201** Date Collected: 12/01/16 11:10

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**1.1**	**U**	**ug/L**	**5**	5.0	1.1	12/8/2016 09:17	J
1,1,2,2-Tetrachloroethane	**1.0**	**U**	**ug/L**	**5**	5.0	1.0	12/8/2016 09:17	J
1,1,2-Trichloroethane	**1.5**	**U**	**ug/L**	**5**	5.0	1.5	12/8/2016 09:17	J
1,1-Dichloroethane	**0.70**	**U**	**ug/L**	**5**	5.0	0.70	12/8/2016 09:17	J
1,1-Dichloroethylene	**0.90**	**U**	**ug/L**	**5**	5.0	0.90	12/8/2016 09:17	J
1,2-Dichloroethane	**1.2**	**U**	**ug/L**	**5**	5.0	1.2	12/8/2016 09:17	J
1,2-Dichloropropane	**1.0**	**U**	**ug/L**	**5**	5.0	1.0	12/8/2016 09:17	J
Bromodichloromethane	**1.2**	**U**	**ug/L**	**5**	5.0	1.2	12/8/2016 09:17	J
Carbon Tetrachloride	**1.8**	**U**	**ug/L**	**5**	5.0	1.8	12/8/2016 09:17	J
Chlorobenzene	**1.0**	**U**	**ug/L**	**5**	5.0	1.0	12/8/2016 09:17	J
Chloroethane	**1.6**	**U**	**ug/L**	**5**	5.0	1.6	12/8/2016 09:17	J
Chloroform	**0.90**	**U**	**ug/L**	**5**	5.0	0.90	12/8/2016 09:17	J
Chloromethane	**1.0**	**U**	**ug/L**	**5**	5.0	1.0	12/8/2016 09:17	J
Dibromochloromethane	**1.6**	**U**	**ug/L**	**5**	5.0	1.6	12/8/2016 09:17	J
Methylene Chloride	**12**	**U**	**ug/L**	**5**	25	12	12/8/2016 09:17	J
Tetrachloroethylene (PCE)	**1.8**	**U**	**ug/L**	**5**	5.0	1.8	12/8/2016 09:17	J
Trichloroethene	**1.4**	**U**	**ug/L**	**5**	5.0	1.4	12/8/2016 09:17	J
Vinyl Chloride	**76**		**ug/L**	**5**	5.0	1.0	12/8/2016 09:17	J
cis-1,2-Dichloroethylene	**1.2**	**U**	**ug/L**	**5**	5.0	1.2	12/8/2016 09:17	J
cis-1,3-Dichloropropene	**0.80**	**U**	**ug/L**	**5**	5.0	0.80	12/8/2016 09:17	J
trans-1,2-Dichloroethylene	**1.0**	**U**	**ug/L**	**5**	5.0	1.0	12/8/2016 09:17	J
trans-1,3-Dichloropropylene	**0.90**	**U**	**ug/L**	**5**	5.0	0.90	12/8/2016 09:17	J
1,2-Dichloroethane-d4 (S)	**101**		**%**	**5**	77-125		12/8/2016 09:17	
Toluene-d8 (S)	**96**		**%**	**5**	80-121		12/8/2016 09:17	
Bromofluorobenzene (S)	**110**		**%**	**5**	80-129		12/8/2016 09:17	

Lab ID: **J1611709045** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208289-20161201** Date Collected: 12/01/16 10:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709045** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208289-20161201** Date Collected: 12/01/16 10:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.66**	**U**	**ug/L**	**3**	3.0	0.66	12/8/2016 09:44	J
1,1,2,2-Tetrachloroethane	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/8/2016 09:44	J
1,1,2-Trichloroethane	**0.90**	**U**	**ug/L**	**3**	3.0	0.90	12/8/2016 09:44	J
1,1-Dichloroethane	**0.42**	**U**	**ug/L**	**3**	3.0	0.42	12/8/2016 09:44	J
1,1-Dichloroethylene	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/8/2016 09:44	J
1,2-Dichloroethane	**0.69**	**U**	**ug/L**	**3**	3.0	0.69	12/8/2016 09:44	J
1,2-Dichloropropane	**0.60**	**U**	**ug/L**	**3**	3.0	0.60	12/8/2016 09:44	J
Bromodichloromethane	**0.75**	**U**	**ug/L**	**3**	3.0	0.75	12/8/2016 09:44	J
Carbon Tetrachloride	**1.1**	**U**	**ug/L**	**3**	3.0	1.1	12/8/2016 09:44	J
Chlorobenzene	**0.63**	**U**	**ug/L**	**3**	3.0	0.63	12/8/2016 09:44	J
Chloroethane	**0.99**	**U**	**ug/L**	**3**	3.0	0.99	12/8/2016 09:44	J
Chloroform	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/8/2016 09:44	J
Chloromethane	**0.63**	**U**	**ug/L**	**3**	3.0	0.63	12/8/2016 09:44	J
Dibromochloromethane	**0.99**	**U**	**ug/L**	**3**	3.0	0.99	12/8/2016 09:44	J
Methylene Chloride	**7.5**	**U**	**ug/L**	**3**	15	7.5	12/8/2016 09:44	J
Tetrachloroethylene (PCE)	**1.1**	**U**	**ug/L**	**3**	3.0	1.1	12/8/2016 09:44	J
Trichloroethene	**38**		**ug/L**	**3**	3.0	0.87	12/8/2016 09:44	J
Vinyl Chloride	**95**		**ug/L**	**3**	3.0	0.60	12/8/2016 09:44	J
cis-1,2-Dichloroethylene	**120**		**ug/L**	**3**	3.0	0.72	12/8/2016 09:44	J
cis-1,3-Dichloropropene	**0.48**	**U**	**ug/L**	**3**	3.0	0.48	12/8/2016 09:44	J
trans-1,2-Dichloroethylene	**10**		**ug/L**	**3**	3.0	0.60	12/8/2016 09:44	J
trans-1,3-Dichloropropylene	**0.54**	**U**	**ug/L**	**3**	3.0	0.54	12/8/2016 09:44	J
1,2-Dichloroethane-d4 (S)	**94**		**%**	**3**	77-125		12/8/2016 09:44	
Toluene-d8 (S)	**99**		**%**	**3**	80-121		12/8/2016 09:44	
Bromofluorobenzene (S)	**109**		**%**	**3**	80-129		12/8/2016 09:44	

Lab ID: **J1611709046** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208343-20161201** Date Collected: 12/01/16 10:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709046** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208343-20161201** Date Collected: 12/01/16 10:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**1.1**	**U**	**ug/L**	**5**	5.0	1.1	12/8/2016 10:11	J
1,1,2,2-Tetrachloroethane	**1.0**	**U**	**ug/L**	**5**	5.0	1.0	12/8/2016 10:11	J
1,1,2-Trichloroethane	**1.5**	**U**	**ug/L**	**5**	5.0	1.5	12/8/2016 10:11	J
1,1-Dichloroethane	**0.70**	**U**	**ug/L**	**5**	5.0	0.70	12/8/2016 10:11	J
1,1-Dichloroethylene	**0.90**	**U**	**ug/L**	**5**	5.0	0.90	12/8/2016 10:11	J
1,2-Dichloroethane	**1.2**	**U**	**ug/L**	**5**	5.0	1.2	12/8/2016 10:11	J
1,2-Dichloropropane	**1.0**	**U**	**ug/L**	**5**	5.0	1.0	12/8/2016 10:11	J
Bromodichloromethane	**1.2**	**U**	**ug/L**	**5**	5.0	1.2	12/8/2016 10:11	J
Carbon Tetrachloride	**1.8**	**U**	**ug/L**	**5**	5.0	1.8	12/8/2016 10:11	J
Chlorobenzene	**1.0**	**U**	**ug/L**	**5**	5.0	1.0	12/8/2016 10:11	J
Chloroethane	**1.6**	**U**	**ug/L**	**5**	5.0	1.6	12/8/2016 10:11	J
Chloroform	**0.90**	**U**	**ug/L**	**5**	5.0	0.90	12/8/2016 10:11	J
Chloromethane	**1.0**	**U**	**ug/L**	**5**	5.0	1.0	12/8/2016 10:11	J
Dibromochloromethane	**1.6**	**U**	**ug/L**	**5**	5.0	1.6	12/8/2016 10:11	J
Methylene Chloride	**12**	**U**	**ug/L**	**5**	25	12	12/8/2016 10:11	J
Tetrachloroethylene (PCE)	**1.8**	**U**	**ug/L**	**5**	5.0	1.8	12/8/2016 10:11	J
Trichloroethene	**7.0**		**ug/L**	**5**	5.0	1.4	12/8/2016 10:11	J
Vinyl Chloride	**81**		**ug/L**	**5**	5.0	1.0	12/8/2016 10:11	J
cis-1,2-Dichloroethylene	**170**		**ug/L**	**5**	5.0	1.2	12/8/2016 10:11	J
cis-1,3-Dichloropropene	**0.80**	**U**	**ug/L**	**5**	5.0	0.80	12/8/2016 10:11	J
trans-1,2-Dichloroethylene	**13**		**ug/L**	**5**	5.0	1.0	12/8/2016 10:11	J
trans-1,3-Dichloropropylene	**0.90**	**U**	**ug/L**	**5**	5.0	0.90	12/8/2016 10:11	J
1,2-Dichloroethane-d4 (S)	**104**		**%**	**5**	77-125		12/8/2016 10:11	
Toluene-d8 (S)	**97**		**%**	**5**	80-121		12/8/2016 10:11	
Bromofluorobenzene (S)	**104**		**%**	**5**	80-129		12/8/2016 10:11	

Lab ID: **J1611709047** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208282-20161201** Date Collected: 12/01/16 11:13

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								

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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709047** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-IDW208282-20161201** Date Collected: 12/01/16 11:13

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.44**	**U**	**ug/L**	**2**	2.0	0.44	12/8/2016 10:38	J
1,1,2,2-Tetrachloroethane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 10:38	J
1,1,2-Trichloroethane	**0.60**	**U**	**ug/L**	**2**	2.0	0.60	12/8/2016 10:38	J
1,1-Dichloroethane	**0.28**	**U**	**ug/L**	**2**	2.0	0.28	12/8/2016 10:38	J
1,1-Dichloroethylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 10:38	J
1,2-Dichloroethane	**0.46**	**U**	**ug/L**	**2**	2.0	0.46	12/8/2016 10:38	J
1,2-Dichloropropane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 10:38	J
Bromodichloromethane	**0.50**	**U**	**ug/L**	**2**	2.0	0.50	12/8/2016 10:38	J
Carbon Tetrachloride	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/8/2016 10:38	J
Chlorobenzene	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/8/2016 10:38	J
Chloroethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/8/2016 10:38	J
Chloroform	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 10:38	J
Chloromethane	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/8/2016 10:38	J
Dibromochloromethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/8/2016 10:38	J
Methylene Chloride	**5.0**	**U**	**ug/L**	**2**	10	5.0	12/8/2016 10:38	J
Tetrachloroethylene (PCE)	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/8/2016 10:38	J
Trichloroethene	**85**		**ug/L**	**2**	2.0	0.58	12/8/2016 10:38	J
Vinyl Chloride	**210**		**ug/L**	**2**	2.0	0.40	12/8/2016 10:38	J
cis-1,2-Dichloroethylene	**140**		**ug/L**	**2**	2.0	0.48	12/8/2016 10:38	J
cis-1,3-Dichloropropene	**0.32**	**U**	**ug/L**	**2**	2.0	0.32	12/8/2016 10:38	J
trans-1,2-Dichloroethylene	**13**		**ug/L**	**2**	2.0	0.40	12/8/2016 10:38	J
trans-1,3-Dichloropropylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 10:38	J
1,2-Dichloroethane-d4 (S)	**104**		**%**	**2**	77-125		12/8/2016 10:38	
Toluene-d8 (S)	**93**		**%**	**2**	80-121		12/8/2016 10:38	
Bromofluorobenzene (S)	**102**		**%**	**2**	80-129		12/8/2016 10:38	

Lab ID: **J1611709048** Date Received: 12/02/16 14:34 Matrix: Water
Sample ID: **LC39B-MW0036-025.0-20161128** Date Collected: 11/28/16 15:21

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								

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ANALYTICAL RESULTS

Workorder: J1611709 NASA KSC LC39B

Lab ID: **J1611709048** Date Received: 12/02/16 14:34 Matrix: Water

Sample ID: **LC39B-MW0036-025.0-20161128** Date Collected: 11/28/16 15:21

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1-Trichloroethane	**0.44**	**U**	**ug/L**	**2**	2.0	0.44	12/8/2016 11:05	J
1,1,2,2-Tetrachloroethane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 11:05	J
1,1,2-Trichloroethane	**0.60**	**U**	**ug/L**	**2**	2.0	0.60	12/8/2016 11:05	J
1,1-Dichloroethane	**0.28**	**U**	**ug/L**	**2**	2.0	0.28	12/8/2016 11:05	J
1,1-Dichloroethylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 11:05	J
1,2-Dichloroethane	**0.46**	**U**	**ug/L**	**2**	2.0	0.46	12/8/2016 11:05	J
1,2-Dichloropropane	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 11:05	J
Bromodichloromethane	**0.50**	**U**	**ug/L**	**2**	2.0	0.50	12/8/2016 11:05	J
Carbon Tetrachloride	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/8/2016 11:05	J
Chlorobenzene	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/8/2016 11:05	J
Chloroethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/8/2016 11:05	J
Chloroform	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 11:05	J
Chloromethane	**0.42**	**U**	**ug/L**	**2**	2.0	0.42	12/8/2016 11:05	J
Dibromochloromethane	**0.66**	**U**	**ug/L**	**2**	2.0	0.66	12/8/2016 11:05	J
Methylene Chloride	**5.0**	**U**	**ug/L**	**2**	10	5.0	12/8/2016 11:05	J
Tetrachloroethylene (PCE)	**0.72**	**U**	**ug/L**	**2**	2.0	0.72	12/8/2016 11:05	J
Trichloroethene	**180**		**ug/L**	**2**	2.0	0.58	12/8/2016 11:05	J
Vinyl Chloride	**0.40**	**U**	**ug/L**	**2**	2.0	0.40	12/8/2016 11:05	J
cis-1,2-Dichloroethylene	**36**		**ug/L**	**2**	2.0	0.48	12/8/2016 11:05	J
cis-1,3-Dichloropropene	**0.32**	**U**	**ug/L**	**2**	2.0	0.32	12/8/2016 11:05	J
trans-1,2-Dichloroethylene	**4.3**		**ug/L**	**2**	2.0	0.40	12/8/2016 11:05	J
trans-1,3-Dichloropropylene	**0.36**	**U**	**ug/L**	**2**	2.0	0.36	12/8/2016 11:05	J
1,2-Dichloroethane-d4 (S)	**105**		**%**	**2**	77-125		12/8/2016 11:05	
Toluene-d8 (S)	**95**		**%**	**2**	80-121		12/8/2016 11:05	
Bromofluorobenzene (S)	**108**		**%**	**2**	80-129		12/8/2016 11:05	

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ANALYTICAL RESULTS QUALIFIERS

Workorder: J1611709 NASA KSC LC39B

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

J	DOH Certification #E82574(AEL-JAX)(FL NELAC Certification)

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QUALITY CONTROL DATA

Workorder: J1611709 NASA KSC LC39B

QC Batch: MSVj/2912 Analysis Method: SW-846 8260B
QC Batch Method: SW-846 5030B Prepared: 12/05/2016 10:38
Associated Lab Samples: J1611709042, J1611709043

METHOD BLANK: 2213781

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Chloromethane	ug/L	0.21	0.21	U
Vinyl Chloride	ug/L	0.20	0.20	U
Chloroethane	ug/L	0.33	0.33	U
1,1-Dichloroethylene	ug/L	0.18	0.18	U
Methylene Chloride	ug/L	2.5	2.5	U
trans-1,2-Dichloroethylene	ug/L	0.20	0.20	U
1,1-Dichloroethane	ug/L	0.14	0.14	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Chloroform	ug/L	0.18	0.18	U
1,2-Dichloroethane	ug/L	0.23	0.23	U
1,1,1-Trichloroethane	ug/L	0.22	0.22	U
Carbon Tetrachloride	ug/L	0.36	0.36	U
1,2-Dichloropropane	ug/L	0.20	0.20	U
Trichloroethene	ug/L	0.29	0.29	U
Bromodichloromethane	ug/L	0.25	0.25	U
cis-1,3-Dichloropropene	ug/L	0.16	0.16	U
trans-1,3-Dichloropropylene	ug/L	0.18	0.18	U
1,1,2-Trichloroethane	ug/L	0.30	0.30	U
Dibromochloromethane	ug/L	0.33	0.33	U
Tetrachloroethylene (PCE)	ug/L	0.36	0.36	U
Chlorobenzene	ug/L	0.21	0.21	U
1,1,2,2-Tetrachloroethane	ug/L	0.20	0.20	U
1,2-Dichloroethane-d4 (S)	%	100	77-125	
Toluene-d8 (S)	%	101	80-121	
Bromofluorobenzene (S)	%	105	80-129	

QC Batch: MSVj/2928 Analysis Method: SW-846 8260B
QC Batch Method: SW-846 5030B Prepared: 12/07/2016 06:41
Associated Lab Samples: J1611709001, J1611709002, J1611709003, J1611709004, J1611709005, J1611709006, J1611709007, J1611709008,

METHOD BLANK: 2214866

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Chloromethane	ug/L	0.21	0.21	U
Vinyl Chloride	ug/L	0.20	0.20	U

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QUALITY CONTROL DATA

Workorder: J1611709 NASA KSC LC39B

METHOD BLANK: 2214866

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Chloroethane	ug/L	0.33	0.33	U
1,1-Dichloroethylene	ug/L	0.18	0.18	U
Methylene Chloride	ug/L	2.5	2.5	U
trans-1,2-Dichloroethylene	ug/L	0.20	0.20	U
1,1-Dichloroethane	ug/L	0.14	0.14	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Chloroform	ug/L	0.18	0.18	U
1,2-Dichloroethane	ug/L	0.23	0.23	U
1,1,1-Trichloroethane	ug/L	0.22	0.22	U
Carbon Tetrachloride	ug/L	0.36	0.36	U
1,2-Dichloropropane	ug/L	0.20	0.20	U
Trichloroethene	ug/L	0.29	0.29	U
Bromodichloromethane	ug/L	0.25	0.25	U
cis-1,3-Dichloropropene	ug/L	0.16	0.16	U
trans-1,3-Dichloropropylene	ug/L	0.18	0.18	U
1,1,2-Trichloroethane	ug/L	0.30	0.30	U
Dibromochloromethane	ug/L	0.33	0.33	U
Tetrachloroethylene (PCE)	ug/L	0.36	0.36	U
Chlorobenzene	ug/L	0.21	0.21	U
1,1,2,2-Tetrachloroethane	ug/L	0.20	0.20	U
1,2-Dichloroethane-d4 (S)	%	100	77-125	
Toluene-d8 (S)	%	97	80-121	
Bromofluorobenzene (S)	%	103	80-129	

QC Batch: MSVj/2934 Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030B Prepared: 12/07/2016 18:23

Associated Lab Samples: J1611709019, J1611709020, J1611709021, J1611709022, J1611709023, J1611709024, J1611709025, J1611709026,

METHOD BLANK: 2216343

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Chloromethane	ug/L	0.21	0.21	U
Vinyl Chloride	ug/L	0.20	0.20	U
Chloroethane	ug/L	0.33	0.33	U
1,1-Dichloroethylene	ug/L	0.18	0.18	U
Methylene Chloride	ug/L	2.5	2.5	U
trans-1,2-Dichloroethylene	ug/L	0.20	0.20	U
1,1-Dichloroethane	ug/L	0.14	0.14	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Chloroform	ug/L	0.18	0.18	U
1,2-Dichloroethane	ug/L	0.23	0.23	U

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QUALITY CONTROL DATA

Workorder: J1611709 NASA KSC LC39B

METHOD BLANK: 2216343

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
1,1,1-Trichloroethane	ug/L	0.22	0.22	U
Carbon Tetrachloride	ug/L	0.36	0.36	U
1,2-Dichloropropane	ug/L	0.20	0.20	U
Trichloroethene	ug/L	0.29	0.29	U
Bromodichloromethane	ug/L	0.25	0.25	U
cis-1,3-Dichloropropene	ug/L	0.16	0.16	U
trans-1,3-Dichloropropylene	ug/L	0.18	0.18	U
1,1,2-Trichloroethane	ug/L	0.30	0.30	U
Dibromochloromethane	ug/L	0.33	0.33	U
Tetrachloroethylene (PCE)	ug/L	0.36	0.36	U
Chlorobenzene	ug/L	0.21	0.21	U
1,1,2,2-Tetrachloroethane	ug/L	0.20	0.20	U
1,2-Dichloroethane-d4 (S)	%	103	77-125	
Toluene-d8 (S)	%	96	80-121	
Bromofluorobenzene (S)	%	106	80-129	

QC Batch: MSVj/2936 Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030B Prepared: 12/08/2016 06:07

Associated Lab Samples: J1611709039, J1611709040, J1611709041, J1611709044, J1611709045, J1611709046, J1611709047, J1611709048

METHOD BLANK: 2216352

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Chloromethane	ug/L	0.21	0.21	U
Vinyl Chloride	ug/L	0.20	0.20	U
Chloroethane	ug/L	0.33	0.33	U
1,1-Dichloroethylene	ug/L	0.18	0.18	U
Methylene Chloride	ug/L	2.5	2.5	U
trans-1,2-Dichloroethylene	ug/L	0.20	0.20	U
1,1-Dichloroethane	ug/L	0.14	0.14	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Chloroform	ug/L	0.18	0.18	U
1,2-Dichloroethane	ug/L	0.23	0.23	U
1,1,1-Trichloroethane	ug/L	0.22	0.22	U
Carbon Tetrachloride	ug/L	0.36	0.36	U
1,2-Dichloropropane	ug/L	0.20	0.20	U
Trichloroethene	ug/L	0.29	0.29	U
Bromodichloromethane	ug/L	0.25	0.25	U
cis-1,3-Dichloropropene	ug/L	0.16	0.16	U
trans-1,3-Dichloropropylene	ug/L	0.18	0.18	U
1,1,2-Trichloroethane	ug/L	0.30	0.30	U

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QUALITY CONTROL DATA

Workorder: J1611709 NASA KSC LC39B

METHOD BLANK: 2216352

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Dibromochloromethane	ug/L	0.33	0.33	U
Tetrachloroethylene (PCE)	ug/L	0.36	0.36	U
Chlorobenzene	ug/L	0.21	0.21	U
1,1,2,2-Tetrachloroethane	ug/L	0.20	0.20	U
1,2-Dichloroethane-d4 (S)	%	101	77-125	
Toluene-d8 (S)	%	96	80-121	
Bromofluorobenzene (S)	%	107	80-129	

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J1611709 NASA KSC LC39B

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J1611709042	LC39B-IDW208279-20161201	SW-846 5030B	MSVj/2912	SW-846 8260B	MSVj/2913
J1611709043	LC39B-IDW208280-20161201	SW-846 5030B	MSVj/2912	SW-846 8260B	MSVj/2913
J1611709001	LC39B-MW0031-012.5-20161128	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709002	LC39B-MW0033-041.0-20161128	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709003	LC39B-MW0010-027.0-20161128	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709004	LC39B-MW0011-045.0-20161128	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709005	LC39B-MW0012-045.0-20161128	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709006	LC39B-MW0020-045.0-20161128	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709007	LC39B-MW0013-021.0-20161128	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709008	LC39B-MW0032-013.0-20161128	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709009	LC39B-MW0037-031.0-20161130	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709010	LOX-TA0004S-013.0-20161201	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709011	LC39B-MW0029-035.0-20161130	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709012	LC39B-MW0040-017.0-20161201	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709013	LC39B-MW0034-013.0--20161130	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709014	LC39B-MW0027-045.0--20161130	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709015	LC39B-MW0025-045.0-20161130	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709016	LC39B-MW0023-045.0-20161130	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709017	LC39B-MW0039-011.0-20161201	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709018	LOX-TA0002S-013.0-20161201	SW-846 5030B	MSVj/2928	SW-846 8260B	MSVj/2929
J1611709019	ECS-IW0008I-044.5-20161201	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709020	ECS-IW0006I-035.0-20161201	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709021	ECS-IW0004I-044.0-20161201	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709022	ECS-IW0005I-044.5-20161201	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709023	LC39B-MW0028-045.0-20161130	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935

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Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (904)363-9350
Fax: (904)363-9354

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J1611709 NASA KSC LC39B

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J1611709024	LC39B-MW0035-023.0-20161130	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709025	LC39B-MW0038-041.0-20161130	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709026	LC39B-MW0030-045.0-20161130	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709027	LC39B-MW0026-035.0-20161130	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709028	LC39B-MW0022-035.0-20161129	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709029	LC39B-MW0024-035.0-20161130	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709030	LC39B-MW0021-025.0-20161130	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709031	LC39B-MW0017-035.0-20161129	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709032	LC39B-MW0015-031.0-20161129	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709033	LC39B-MW0014-021.0-20161129	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709034	LC39B-MW0019-035.0-20161129	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709035	LC39B-MW0018-025.0-20161129	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709036	LC39B-MW0016-025.0-20161129	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709037	LC39B-IDW205772-20161201	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709038	LC39B-IDW208269-20161201	SW-846 5030B	MSVj/2934	SW-846 8260B	MSVj/2935
J1611709039	LC39B-IDW208271-20161201	SW-846 5030B	MSVj/2936	SW-846 8260B	MSVj/2937
J1611709040	LC39B-IDW208272-20161201	SW-846 5030B	MSVj/2936	SW-846 8260B	MSVj/2937
J1611709041	LC39B-IDW208278-20161201	SW-846 5030B	MSVj/2936	SW-846 8260B	MSVj/2937
J1611709044	LC39B-IDW208281-20161201	SW-846 5030B	MSVj/2936	SW-846 8260B	MSVj/2937
J1611709045	LC39B-IDW208289-20161201	SW-846 5030B	MSVj/2936	SW-846 8260B	MSVj/2937
J1611709046	LC39B-IDW208343-20161201	SW-846 5030B	MSVj/2936	SW-846 8260B	MSVj/2937
J1611709047	LC39B-IDW208282-20161201	SW-846 5030B	MSVj/2936	SW-846 8260B	MSVj/2937
J1611709048	LC39B-MW0036-025.0-20161128	SW-846 5030B	MSVj/2936	SW-846 8260B	MSVj/2937

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☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327

J1611709

Client Name:	Geosyntec Consultants
Address:	6770 South Washington Ave, Suite 3
	Titusville, FL 32780
Phone:	321.269.5880
FAX:	
Contact:	Mike ~~Tim~~ Burcham
Sampled By:	Ben Coppenger
Turn Around Time:	☒ STANDARD ☐ RUSH
Page	1 of 5

Project Name:	NASA KSC LC39B
P.O. Number/Project Number:	FR1352E
Project Location	
FDEP Facility No:	
Project Name and Address:	
	GNV Profile:
Special Instructions:	☒ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: CVOC 8260	Preservation	Field-Filtered?	LABORATORY I.D. NUMBER
	LC39B-MW0031-012.5-20161128	G	11/28	1423	GW	3	40 ml	X	HCl/ICE	N	001
	LC39B-MW0033-041.0-20161128		11/28	1355							002
	LC39B-MW0010-027.0-20161128		11/28	1328							003
	LC39B-MW0011-045.0-20161128		11/28	1306							004
	LC39B-MW0012-045.0-20161128		11/28	1241							005
	LC39B-MW0020-045.0-20161128		11/28	1217							006
	LC39B-MW0013-021.0-20161128		11/28	1152							007
	LC39B-MW0032-013.0-20161128		11/28	1454							008
	LC39B-MW0037-031.0-20161129		11/30	1506							009
	LOX-DA0004S-013.0-20161201		12/1	1021							010

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☐ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015

Device used for measuring Temp by unique identifier (circle IR temp gun used) G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1	[signature]	12/01	1445	Runaboutcouriers		
2	runaboutcouriers	12/2/16	14:34	[signature]	12/2/16	14:34
3						
4						

FOR DRINKING WATER USE:
(When PWS Information not otherwise supplied) PWS ID:
Contact Person: Phone :
Supplier of Water:
Site-Address:

Tuesday, December 13, 2016 1:37:31 PM
Page 59 of 64

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☐ Miramar: 10200 USA Today Way, Miramar, FL 33025 • 954.889.22
☐ Tallahassee: 1288 Cedar Center Drive, Tallahassee, FL 32301 •
☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.961

J1611709

Client Name:	Geosyntec Consultants
Address:	6770 South Washington Ave, Suite 3
	Titusville, FL 32780
Phone:	321.269.5880
FAX:	
Contact:	Mike Tim Burcham
Sampled By:	Ben Coppenger
Turn Around Time:	☒ STANDARD ☐ RUSH
Page	2 of 5

Project Name: NASA KSC LC39B
P.O. Number/Project Number: FR1352E
Project Location:
FDEP Facility No:
Project Name and Address:

GNV Profile:

Special Instructions:
☐ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE: 40 ml	ANALYSIS REQUIRED: CVOC 8260	Preservation: HCl/ICE	Field-Filtered? N	LABORATORY I.D. NUMBER
	LC39B-MW0029-035.0-20161130	G	11/30	1412	GW	3		X			011
	LC39B-MW0040-017.0-20161201		12/01	1224							012
	LC39B-MW0034-013.0-20161130		11/30	1604							013
	LC39B-MW0027-045.0-20161130		11/30	1224							014
	LC39B-MW0025-045.0-20161130		11/30	1136							015
	LC39B-MW0023-045.0-20161130		11/30	1050							016
	LC39B-MW0039-011.0-20161201		12/01	1239							017
	LOX-TA0002S-013.0-20161201		12/01	1201							018
	ECS-IW0008I-044.5-20161201		12/01	0931							019
	ECS-IW0006I-035.0-20161201		12/01	0856							020

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1		12/01	1445	Runabout couriers		
2	Runabout couriers	12/2/16	14:34		12/2/16	14:34
3						
4						

FOR DRINKING WATER USE:
(When PWS Information not otherwise supplied) PWS ID:
Contact Person: Phone:
Supplier of Water:
Site-Address:

Tuesday, December 13, 2016 1:37:31 PM
Page 60 of 64

J16011709

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☐ **Miramar:** 10200 USA Today Way, Miramar, FL 33025 • 954.889.2288 • Fax 954.889.2281
☐ **Tallahassee:** 1288 Cedar Center Drive, Tallahassee, FL 32301 • 850.219.6274 • Fax 850.219.6275
☐ **Tampa:** 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327

Client Name:	Geosyntec Consultants
Address:	6770 South Washington Ave, Suite 3
	Titusville, FL 32780
Phone:	321.269.5880
FAX:	
Contact:	Mike Tim Burcham
Sampled By:	Ben Coddenger
Turn Around Time:	☒ STANDARD ☐ RUSH
Page	3 of 3

Project Name: NASA KSC LC39B
P.O. Number/Project Number: FR1352E
Project Location:
FDEP Facility No:
Project Name and Address:

GNV Profile:

Special Instructions:
☒ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED										LABORATORY I.D. NUMBER
							40 ml	CVOC 8260										
							Preservation	HCl	ICE									
							Field-Filtered?	N										
	ECS-IW0004I-044.0-20161201	G	12/01	0823	GW	3		Y										021
	ECS-IW0005I-044.5-20161201		12/01	0756														022
	LC39B-MW0028-045.0-20161130		11/30	1615														023
	LC39B-MW0035-023.0-20161130		11/30	1549														024
	LC39B-MW0038-041.0-20161130		11/30	1448														025
	LC39B-MW0030-045.0-20161130		11/30	1406														026
	LC39B-MW0026-035.0-20161130		11/30	1217														027
	LC39B-MW0022-035.0-20161129		11/29	1029														028
	LC39B-MW0024-035.0-20161130		11/30	1126														029
	LC39B-MW0021-025.0-20161130		11/30	1046														030

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1		12/01	1445	Runabout couriers		
2	Runabout couriers	12/2/16	14:34		12/2/16	14:34
3						
4						

FOR DRINKING WATER USE:
(When PWS Information not otherwise supplied) PWS ID:
Contact Person: Phone :
Supplier of Water:
Site-Address:

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J1611709

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☐ Miramar: 10200 USA Today Way, Miramar, FL 33025 • 954.889.2288 • Fax 954.889.2281
☐ Tallahassee: 1288 Cedar Center Drive, Tallahassee, FL 32301 • 850.219.6274 • Fax 850.219.6275
☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327

Client Name:	Geosyntec Consultants
Address:	6770 South Washington Ave, Suite 3
	Titusville, FL 32780
Phone:	321.269.5880
FAX:	
Contact:	Mike (BS) Tim Burcham
Sampled By:	Ben Coppenger
Turn Around Time:	☒ STANDARD ☐ RUSH
Page	4 of 5

Project Name:	NASA KSC LC39B
P.O. Number/Project Number:	FR1352E
Project Location:	
FDEP Facility No:	
Project Name and Address:	
	GNV Profile:
Special Instructions:	☒ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE: 40 ml	ANALYSIS REQUIRED: CVOC 8260	Preservation	Field-Filtered?	LABORATORY I.D. NUMBER
	LC39B-MW0017-035.0-20161129	G	11/29	1522	GW	3		Y	HCl/ICE	N	031
	LC39B-MW0015-031.0-20161129		11/29	1350							032
	LC39B-MW0014-021.0-20161129		11/29	1431							033
	LC39B-MW0019-035.0-20161129		11/29	1627							034
	LC39B-MW0018-025.0-20161129		11/29	1612							035
	LC39B-MW0016-025.0-20161129		11/29	1520							036
	LC39B-IDW205772000.0-20161201		12/01	1006							037
	LC39B-IDW208269-000.0-20161201		12/01	1002							038
	LC39B-IDW208271-000.0-20161201		12/01	1018							039
	LC39B-IDW208272-000.0-20161201		12/01	1012							040

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015

Device used for measuring Temp by unique identifier (circle IR temp gun used) (J: 9A) G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1	[signature]	12/01	1445	Runabout couriers		
2	Runabout couriers	12/2/16	14:34	[signature]	12/2/16	14:34
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID:

Contact Person: Phone :

Supplier of Water:

Site-Address:

Tuesday, December 13, 2016 1:37:31 PM

J1611709

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☐ **Tallahassee:** 1288 Cedar Center Drive, Tallahassee, FL 32301 • 850.219.6274 • Fax 850.219.6275
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Client Name:	Geosyntec Consultants
Address:	6770 South Washington Ave, Suite 3
	Titusville, FL 32780
Phone:	321.269.5880
FAX:	
Contact:	Mike Tim Burcham
Sampled By:	Ben Coppenger
Turn Around Time:	☒ STANDARD ☐ RUSH
Page	5 of 5

Project Name: NASA KSC LC39B
P.O. Number/Project Number: FR1352E
Project Location:
FDEP Facility No.:
Project Name and Address:

GNV Profile:

Special Instructions:
☒ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED	Preservation	Field-Filtered?	LABORATORY I.D. NUMBER
							40 ml	CVOC 8260	HCl ICE	N	
	LC39B-IDW208278-000.0-20161201	G	12/01	1054	GW	3	X				041
	LC39B-IDW208279-000.0-20161201		12/01	1048							042
	LC39B-IDW208280-000.0-20161201		12/01	1101							043
	LC39B-IDW208281-000.0-20161201		12/01	1110							044
	LC39B-IDW208289-000.0-20161201		12/01	1050							045
	LC39B-IDW208343-000.0-20161201		12/01	1040							046
	LC39B-IDW208282-000.0-20161201		12/01	1113							047
	LC39B-MW0036-025.0-20161188		11/28	1521							048

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☒ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1		12/01	1445	Rumbaugh couriers		
2	Rumbaugh couriers	12/2/16	14:34		12/2/16	14:34
3						
4						

FOR DRINKING WATER USE:
(When PWS Information not otherwise supplied) PWS ID:
Contact Person: Phone :
Supplier of Water:
Site-Address:

Tuesday, December 13, 2016 1:37:31 PM

Advanced Environmental Labs Inc

Client: Geosyntec Project name: NASA KSC LC39B

Date/Time Rcvd: 12-2-16 1434 Log-In request number: J1611709

Received by: BA Completed by: BY

Cooler/Shipping Information:

Courier: ☐ AEL ☑ Client ☐ UPS ☐ Blue Streak ☐ FedEx ☐ AES ☐ ASAP ☑ Other (describe) Rumabout Couriers

Type: ☑ Cooler ☐ Box ☐ Other (describe) _____

Cooler temperature: Identify the cooler and document the temperature blank or ice water measurement

Cooler ID					
Temp (°C)	4				
Temp taken from	☐ Sample Bottle ☑ Cooler	☐ Sample Bottle ☐ Cooler	☐ Sample Bottle ☐ Cooler	☐ Sample Bottle ☐ Cooler	☐ Sample Bottle ☐ Cooler
Temp measured with	☐ IR gun S/N 9333779 ☐ Thermometer (enter ID):	☐ IR gun S/N 9333779 ☐ Thermometer (enter ID):	☐ IR gun S/N 9333779 ☐ Thermometer (enter ID):	☐ IR gun S/N 9333779 ☐ Thermometer (enter ID):	☐ IR gun S/N 9333779 ☐ Thermometer (enter ID):

Other Information:

Any discrepancies should be explained in the "Comments" section below.

CHECKLIST	YES	NO	NA
1. Were custody seals on shipping container(s) intact?			✓
2. Were custody papers properly included with samples?	✓		
3. Were custody papers properly filled out (ink, signed, match labels)?	✓		
4. Did all bottles arrive in good condition (unbroken)?	✓		
5. Were all bottle labels complete (sample #, date, signed, analysis, preservatives)?	✓		
6. Did the sample labels agree with the chain of custody?	✓		
7. Were correct bottles used for the tests indicated?	✓		
8. Were proper sample preservation techniques indicated on the label?	✓		
9. Were samples received within holding times?	✓		
10. Were all VOA vials free of the presence of air bubbles?		✓	
11. Have all Soil VOA Vials and Encores been placed in a freezer within 48 hours of collection?			✓
12. Were samples in direct contact with wet ice? If "No," check one: ☐ NO ICE ☐ BLUE ICE	✓		
13. Was the cooler temperature less than 6°C?	✓		
14. Where pH preservation is required, are sample pHs checked and any anomalies recorded by Sample control? Are all <2 or >10? Note: VOA samples are checked by laboratory analysts.			✓
15. Was sufficient sample volume provided to perform all tests?	✓		
16. If for Bacteriological testing, were containers supplied by AEL? (See QA officer if answer is no)			✓
17. Were all sample containers provided by AEL? (Other than Bacteriological)	✓	✓	
18. Were samples accepted into the laboratory?	✓		
19. When necessary to split samples into other bottles, is it noted in the comments?	✓		

Comments: (Note all sample(s) and container (s)" with a "No" checklist response in this comment section)

vials that did not come from AEL are samples -040 through -047!
there are headspace in 1 HCl vial for samples - 019, -034, -035, -045!
2 HCl vials have headspace for sample - 044!
All 3 vials are unp. for samples - 042 & -043!

DCN: AD-D048
Eff date 2/3/10, Last rev 9/6/16

JANUARY AND MARCH 2017
WASTE CHARACTERIZATION

LABORATORY ANALYTICAL RESULTS

Advanced Environmental Laboratories, Inc.

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Phone: (904)363-9350
Fax: (904)363-9354

February 6, 2017

Eric Sager
Geosyntec Consultants
1200 Riverplace Blvd
Jacksonville, FL 32207

RE: Workorder: J1700896 NASA KSC LC39B

Dear Eric Sager:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, January 25, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Todd Romero
TRomero@AELLab.com

Enclosures

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Fax: (904)363-9354

SAMPLE SUMMARY

Workorder: J1700896 NASA KSC LC39B

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J1700896001	LC39B-ASWIDW-0001.0-20170123	Soil	1/23/2017 15:42	1/25/2017 08:00

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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J1700896 NASA KSC LC39B

Lab ID: **J1700896001** Date Received: 01/25/17 08:00 Matrix: Soil

Sample ID: **LC39B-ASWIDW-0001.0-20170123** Date Collected: 01/23/17 15:42

Results for sample J1700896001 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS, TCLP								
Analysis Desc: SW846 6010B Analysis,TCLP	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Arsenic	**0.085**	**U**	**mg/L**	**1**	0.10	0.085	2/2/2017 12:52	J
Barium	**0.0028**	**U**	**mg/L**	**1**	0.020	0.0028	2/2/2017 12:52	J
Cadmium	**0.0032**	**U**	**mg/L**	**1**	0.060	0.0032	2/2/2017 12:52	J
Chromium	**0.0050**	**U**	**mg/L**	**1**	0.040	0.0050	2/2/2017 12:52	J
Lead	**0.013**	**U**	**mg/L**	**1**	0.070	0.013	2/2/2017 12:52	J
Selenium	**0.068**	**U**	**mg/L**	**1**	0.20	0.068	2/2/2017 12:52	J
Silver	**0.0044**	**U**	**mg/L**	**1**	0.040	0.0044	2/2/2017 12:52	J
Analysis Desc: SW846 7470A Analysis,TCLP	Preparation Method: SW-846 7470A Analytical Method: SW-846 7470A							
Mercury	**0.000055**	**U**	**mg/L**	**1**	0.00050	0.000055	2/2/2017 14:50	J
SEMIVOLATILES								
Analysis Desc: 8082A PCB Analysis, Soil	Preparation Method: SW-846 3550B Analytical Method: SW-846 8082A							
Aroclor 1016 (PCB-1016)	**8.3**	**U**	**ug/Kg**	**1**	45	8.3	1/27/2017 01:40	J
Aroclor 1221 (PCB-1221)	**16**	**U**	**ug/Kg**	**1**	45	16	1/27/2017 01:40	J
Aroclor 1232 (PCB-1232)	**39**	**U**	**ug/Kg**	**1**	45	39	1/27/2017 01:40	J
Aroclor 1242 (PCB-1242)	**11**	**U**	**ug/Kg**	**1**	45	11	1/27/2017 01:40	J
Aroclor 1248 (PCB-1248)	**28**	**U**	**ug/Kg**	**1**	45	28	1/27/2017 01:40	J
Aroclor 1254 (PCB-1254)	**19**	**U**	**ug/Kg**	**1**	45	19	1/27/2017 01:40	J
Aroclor 1260 (PCB-1260)	**13**	**I**	**ug/Kg**	**1**	45	9.5	1/27/2017 01:40	J
Tetrachloro-m-xylene (S)	**56**		**%**	**1**	44-130		1/27/2017 01:40	
Decachlorobiphenyl (S)	**95**		**%**	**1**	61-147		1/27/2017 01:40	
VOLATILES, TCLP								
Analysis Desc: 8260B Analysis, TCLP	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1-Dichloroethylene	**0.0018**	**U**	**mg/L**	**10**	0.010	0.0018	2/2/2017 02:39	J
1,2-Dichloroethane	**0.0023**	**U**	**mg/L**	**10**	0.010	0.0023	2/2/2017 02:39	J
1,4-Dichlorobenzene	**0.0022**	**U**	**mg/L**	**10**	0.010	0.0022	2/2/2017 02:39	J
2-Butanone (MEK)	**0.016**	**I**	**mg/L**	**10**	0.050	0.0043	2/2/2017 02:39	J
Benzene	**0.0016**	**U**	**mg/L**	**10**	0.010	0.0016	2/2/2017 02:39	J
Carbon Tetrachloride	**0.0036**	**U**	**mg/L**	**10**	0.010	0.0036	2/2/2017 02:39	J
Chlorobenzene	**0.0021**	**U**	**mg/L**	**10**	0.010	0.0021	2/2/2017 02:39	J

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ANALYTICAL RESULTS

Workorder: J1700896 NASA KSC LC39B

Lab ID: **J1700896001** Date Received: 01/25/17 08:00 Matrix: Soil

Sample ID: **LC39B-ASWIDW-0001.0-20170123** Date Collected: 01/23/17 15:42

Results for sample J1700896001 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Chloroform	**0.0018**	**U**	**mg/L**	**10**	0.010	0.0018	2/2/2017 02:39	J
Tetrachloroethylene (PCE)	**0.0036**	**U**	**mg/L**	**10**	0.010	0.0036	2/2/2017 02:39	J
Trichloroethene	**0.0029**	**U**	**mg/L**	**10**	0.010	0.0029	2/2/2017 02:39	J
Vinyl Chloride	**0.0020**	**U**	**mg/L**	**10**	0.010	0.0020	2/2/2017 02:39	J
1,2-Dichloroethane-d4 (S)	**102**		**%**	**10**	69-134		2/2/2017 02:39	
Toluene-d8 (S)	**99**		**%**	**10**	72-122		2/2/2017 02:39	
Bromofluorobenzene (S)	**108**		**%**	**10**	79-126		2/2/2017 02:39	

VOLATILES, TCLP

Analysis Desc: Percent Solids,SM2540G,Soil	Analytical Method: SM 2540G							
Percent Moisture	**27**		**%**	**1**			2/2/2017 09:00	J

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ANALYTICAL RESULTS QUALIFIERS

Workorder: J1700896 NASA KSC LC39B

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

J	DOH Certification #E82574(AEL-JAX)(FL NELAC Certification)

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QUALITY CONTROL DATA

Workorder: J1700896 NASA KSC LC39B

QC Batch: EXTj/3042 Analysis Method: SW-846 8082A
QC Batch Method: SW-846 3550B Prepared: 01/25/2017 15:00
Associated Lab Samples: J1700896001

METHOD BLANK: 2255971

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
SEMIVOLATILES				
Aroclor 1016 (PCB-1016)	ug/Kg	6.1	6.1	U
Aroclor 1221 (PCB-1221)	ug/Kg	12	12	U
Aroclor 1232 (PCB-1232)	ug/Kg	29	29	U
Aroclor 1242 (PCB-1242)	ug/Kg	7.8	7.8	U
Aroclor 1248 (PCB-1248)	ug/Kg	21	21	U
Aroclor 1254 (PCB-1254)	ug/Kg	14	14	U
Aroclor 1260 (PCB-1260)	ug/Kg	6.9	6.9	U
Tetrachloro-m-xylene (S)	%	61	44-130	
Decachlorobiphenyl (S)	%	64	61-147	

QC Batch: DGMj/2482 Analysis Method: SW-846 6010
QC Batch Method: SW-846 3010A Prepared: 02/02/2017 03:30
Associated Lab Samples: J1700896001

METHOD BLANK: 2260421

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Silver	mg/L	0.00062	0.00044	I
Arsenic	mg/L	0.0085	0.0085	U
Barium	mg/L	0.00028	0.00028	U
Cadmium	mg/L	0.00032	0.00032	U
Chromium	mg/L	0.00053	0.00050	I
Lead	mg/L	0.0013	0.0013	U
Selenium	mg/L	0.0068	0.0068	U

QC Batch: DGMj/2488 Analysis Method: SW-846 7470A
QC Batch Method: SW-846 7470A Prepared: 02/02/2017 11:30
Associated Lab Samples: J1700896001

METHOD BLANK: 2261656

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Mercury	mg/L	0.000011	0.000011	U

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QUALITY CONTROL DATA

Workorder: J1700896 NASA KSC LC39B

QC Batch: MSVj/3212 | Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030B | Prepared: 02/01/2017 15:42

Associated Lab Samples: J1700896001

METHOD BLANK: 2261710

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Vinyl Chloride	mg/L	0.00020	0.00020	U
1,1-Dichloroethylene	mg/L	0.00018	0.00018	U
2-Butanone (MEK)	mg/L	0.00043	0.00043	U
Chloroform	mg/L	0.00018	0.00018	U
1,2-Dichloroethane	mg/L	0.00023	0.00023	U
Carbon Tetrachloride	mg/L	0.00036	0.00036	U
Benzene	mg/L	0.00016	0.00016	U
Trichloroethene	mg/L	0.00029	0.00029	U
Tetrachloroethylene (PCE)	mg/L	0.00036	0.00036	U
Chlorobenzene	mg/L	0.00021	0.00021	U
1,4-Dichlorobenzene	mg/L	0.00022	0.00022	U
1,2-Dichloroethane-d4 (S)	%	106	70-128	
Toluene-d8 (S)	%	100	77-119	
Bromofluorobenzene (S)	%	108	86-123	

QUALITY CONTROL DATA QUALIFIERS

Workorder: J1700896 NASA KSC LC39B

QUALITY CONTROL PARAMETER QUALIFIERS

U The compound was analyzed for but not detected.

I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J1700896 NASA KSC LC39B

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J1700896001	LC39B-ASWIDW-0001.0-20170123	SW-846 3550B	EXTj/3042	SW-846 8082A	GCSj/2424
J1700896001	LC39B-ASWIDW-0001.0-20170123	SW-846 3010A	DGMj/2482	SW-846 6010	ICPj/1754
J1700896001	LC39B-ASWIDW-0001.0-20170123			SM 2540G	WCAj/3418
J1700896001	LC39B-ASWIDW-0001.0-20170123	SW-846 7470A	DGMj/2488	SW-846 7470A	CVAj/1327
J1700896001	LC39B-ASWIDW-0001.0-20170123	SW-846 5030B	MSVj/3212	SW-846 8260B	MSVj/3213

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☐ Miramar: 10200 USA Today Way, Miramar, FL 33025 • 954.
☐ Tallahassee: 1288 Cedar Center Drive, Tallahassee, FL 3
☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327

J1700896

Client Name:	Geosyntec Consultants
Address:	6770 South Washington Ave, Suite 3
	Titusville, FL 32780
Phone:	321.269.5880
FAX:	
Contact:	Eric Sager
Sampled By:	D. Silemore
Turn Around Time:	☐ STANDARD ☐ RUSH
Page	1 of 1

Project Name:	NASA KSC LC39B
P.O. Number/Project Number:	
Project Location:	KSC, FL
FDEP Facility No:	
Project Name and Address:	
GNV Profile:	311007
Special Instructions:	☐ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT
IDW-1		Comp	1/23	1542	Soil	2

ANALYSIS REQUIRED	BOTTLE SIZE & TYPE											LABORATORY I.D. NUMBER
	40 ml											
VOC 8260B		TCLP 8260	TCLP RCRA 8 incl HG	~~TCLP PCB~~ Total PCB *								
Preservation	HCl											
Field-Filtered?	N											
		X	X	X								001

* Total PCB per Todd Romero 1/25/17 CR

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015 Device used for measuring Temp by unique identifier (circle IR temp gun used) (J: 9A) G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1		1/24/17	12:00		1/24/17	2:45
2	Bluestreak	1-25-17	08:00		1-25-17	08:00
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID:

Contact Person: Phone :

Supplier of Water:

Site-Address:

Monday, February 06, 2017 5:03:39 PM

Advanced Environmental Laboratories, Inc.

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March 27, 2017

Eric Sager
Geosyntec Consultants
1200 Riverplace Blvd
Jacksonville, FL 32207

RE: Workorder: J1702450 NASA KSC LC39B

Dear Eric Sager:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, March 10, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Todd Romero
TRomero@AELLab.com

Enclosures

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SAMPLE SUMMARY

Workorder: J1702450 NASA KSC LC39B

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J1702450001	39B-ASWIDW-002.0-20170308	Soil	3/8/2017 15:30	3/10/2017 06:00
J1702450002	39B-ASWIDW-003.0-20170308	Water	3/8/2017 15:45	3/10/2017 06:00

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ANALYTICAL RESULTS

Workorder: J1702450 NASA KSC LC39B

Lab ID: **J1702450001** Date Received: 03/10/17 06:00 Matrix: Soil

Sample ID: **39B-ASWIDW-002.0-20170308** Date Collected: 03/08/17 15:30

Results for sample J1702450001 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
METALS, TCLP								
Analysis Desc: 1311/6010B Analysis,TCLP	Preparation Method: SW-846 3010A Analytical Method: SW-846 6010							
Arsenic	**0.085**	**U**	**mg/L**	**1**	0.10	0.085	3/20/2017 13:21	J
Barium	**0.15**		**mg/L**	**1**	0.020	0.0028	3/20/2017 13:21	J
Cadmium	**0.0032**	**U**	**mg/L**	**1**	0.060	0.0032	3/20/2017 13:21	J
Chromium	**0.0054**	**I,V**	**mg/L**	**1**	0.040	0.0050	3/20/2017 13:21	J
Lead	**0.013**	**U**	**mg/L**	**1**	0.070	0.013	3/20/2017 13:21	J
Selenium	**0.068**	**U**	**mg/L**	**1**	0.20	0.068	3/20/2017 13:21	J
Silver	**0.0044**	**U**	**mg/L**	**1**	0.040	0.0044	3/20/2017 13:21	J
Analysis Desc: 1311/7470A Analysis,TCLP	Preparation Method: SW-846 7470A Analytical Method: SW-846 7470A							
Mercury	**0.000055**	**U**	**mg/L**	**1**	0.00050	0.000055	3/16/2017 16:16	J
SEMIVOLATILES								
Analysis Desc: 8082A PCB Analysis, Soil	Preparation Method: SW-846 3550B Analytical Method: SW-846 8082A							
Aroclor 1016 (PCB-1016)	**6.5**	**U**	**ug/Kg**	**1**	35	6.5	3/14/2017 13:21	J
Aroclor 1221 (PCB-1221)	**13**	**U**	**ug/Kg**	**1**	35	13	3/14/2017 13:21	J
Aroclor 1232 (PCB-1232)	**30**	**U**	**ug/Kg**	**1**	35	30	3/14/2017 13:21	J
Aroclor 1242 (PCB-1242)	**8.3**	**U**	**ug/Kg**	**1**	35	8.3	3/14/2017 13:21	J
Aroclor 1248 (PCB-1248)	**22**	**U**	**ug/Kg**	**1**	35	22	3/14/2017 13:21	J
Aroclor 1254 (PCB-1254)	**15**	**U**	**ug/Kg**	**1**	35	15	3/14/2017 13:21	J
Aroclor 1260 (PCB-1260)	**7.4**	**U**	**ug/Kg**	**1**	35	7.4	3/14/2017 13:21	J
Tetrachloro-m-xylene (S)	**162**	**J4**	**%**	**1**	44-130		3/14/2017 13:21	
Decachlorobiphenyl (S)	**127**		**%**	**1**	61-147		3/14/2017 13:21	
VOLATILES, TCLP								
Analysis Desc: 1311/8260B Analysis, TCLP	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1-Dichloroethylene	**0.0018**	**U**	**mg/L**	**10**	0.010	0.0018	3/19/2017 09:58	J
1,2-Dichloroethane	**0.0023**	**U**	**mg/L**	**10**	0.010	0.0023	3/19/2017 09:58	J
1,4-Dichlorobenzene	**0.0022**	**U**	**mg/L**	**10**	0.010	0.0022	3/19/2017 09:58	J
2-Butanone (MEK)	**0.0043**	**U**	**mg/L**	**10**	0.050	0.0043	3/19/2017 09:58	J
Benzene	**0.0016**	**U**	**mg/L**	**10**	0.010	0.0016	3/19/2017 09:58	J
Carbon Tetrachloride	**0.0036**	**U**	**mg/L**	**10**	0.010	0.0036	3/19/2017 09:58	J
Chlorobenzene	**0.0021**	**U**	**mg/L**	**10**	0.010	0.0021	3/19/2017 09:58	J

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ANALYTICAL RESULTS

Workorder: J1702450 NASA KSC LC39B

Lab ID: **J1702450001** Date Received: 03/10/17 06:00 Matrix: Soil

Sample ID: **39B-ASWIDW-002.0-20170308** Date Collected: 03/08/17 15:30

Results for sample J1702450001 are reported on a dry weight basis.

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
Chloroform	**0.0018**	**U**	**mg/L**	**10**	0.010	0.0018	3/19/2017 09:58	J
Tetrachloroethylene (PCE)	**0.0036**	**U**	**mg/L**	**10**	0.010	0.0036	3/19/2017 09:58	J
Trichloroethene	**0.0029**	**U**	**mg/L**	**10**	0.010	0.0029	3/19/2017 09:58	J
Vinyl Chloride	**0.0020**	**U**	**mg/L**	**10**	0.010	0.0020	3/19/2017 09:58	J
1,2-Dichloroethane-d4 (S)	**90**		**%**	**10**	69-134		3/19/2017 09:58	
Toluene-d8 (S)	**92**		**%**	**10**	72-122		3/19/2017 09:58	
Bromofluorobenzene (S)	**106**		**%**	**10**	79-126		3/19/2017 09:58	

VOLATILES, TCLP

Analysis Desc: Percent Solids,SM2540G,Soil — Analytical Method: SM 2540G

Percent Moisture	**6.1**		**%**	**1**			3/22/2017 13:15	J

Lab ID: **J1702450002** Date Received: 03/10/17 06:00 Matrix: Water

Sample ID: **39B-ASWIDW-003.0-20170308** Date Collected: 03/08/17 15:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
1,1,1,2-Tetrachloroethane	**0.26**	**U**	**ug/L**	**1**	1.0	0.26	3/22/2017 13:17	J
1,1,1-Trichloroethane	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	3/22/2017 13:17	J
1,1,2,2-Tetrachloroethane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	3/22/2017 13:17	J
1,1,2-Trichloroethane	**0.30**	**U**	**ug/L**	**1**	1.0	0.30	3/22/2017 13:17	J
1,1,2-Trichlorotrifluoroethane	**2.2**	**U**	**ug/L**	**1**	10	2.2	3/22/2017 13:17	J
1,1-Dichloroethane	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	3/22/2017 13:17	J
1,1-Dichloroethylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	3/22/2017 13:17	J
1,2,3-Trichlorobenzene	**0.54**	**U**	**ug/L**	**1**	1.0	0.54	3/22/2017 13:17	J
1,2,4-Trichlorobenzene	**0.35**	**U**	**ug/L**	**1**	1.0	0.35	3/22/2017 13:17	J
1,2-Dibromo-3-Chloropropane	**0.11**	**U**	**ug/L**	**1**	0.20	0.11	3/22/2017 13:17	J
1,2-Dichlorobenzene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	3/22/2017 13:17	J
1,2-Dichloroethane	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	3/22/2017 13:17	J
1,2-Dichloropropane	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	3/22/2017 13:17	J
1,3-Dichlorobenzene	**0.19**	**U**	**ug/L**	**1**	1.0	0.19	3/22/2017 13:17	J
1,4-Dichlorobenzene	**0.22**	**U**	**ug/L**	**1**	1.0	0.22	3/22/2017 13:17	J

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ANALYTICAL RESULTS

Workorder: J1702450 NASA KSC LC39B

Lab ID: **J1702450002** Date Received: 03/10/17 06:00 Matrix: Water

Sample ID: **39B-ASWIDW-003.0-20170308** Date Collected: 03/08/17 15:45

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
2-Butanone (MEK)	**0.43**	**U**	**ug/L**	**1**	5.0	0.43	3/22/2017 13:17	J
2-Hexanone	**0.44**	**U**	**ug/L**	**1**	5.0	0.44	3/22/2017 13:17	J
4-Methyl-2-pentanone (MIBK)	**0.47**	**U**	**ug/L**	**1**	1.0	0.47	3/22/2017 13:17	J
Acetone	**2.1**	**U**	**ug/L**	**1**	5.0	2.1	3/22/2017 13:17	J
Benzene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	3/22/2017 13:17	J
Bromochloromethane	**0.17**	**U**	**ug/L**	**1**	1.0	0.17	3/22/2017 13:17	J
Bromodichloromethane	**0.25**	**U**	**ug/L**	**1**	1.0	0.25	3/22/2017 13:17	J
Bromoform	**0.43**	**U**	**ug/L**	**1**	1.0	0.43	3/22/2017 13:17	J
Bromomethane	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	3/22/2017 13:17	J
Carbon Disulfide	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	3/22/2017 13:17	J
Carbon Tetrachloride	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	3/22/2017 13:17	J
Chlorobenzene	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	3/22/2017 13:17	J
Chloroethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	3/22/2017 13:17	J
Chloroform	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	3/22/2017 13:17	J
Chloromethane	**0.21**	**U**	**ug/L**	**1**	1.0	0.21	3/22/2017 13:17	J
Dibromochloromethane	**0.33**	**U**	**ug/L**	**1**	1.0	0.33	3/22/2017 13:17	J
Dichlorodifluoromethane	**0.15**	**U**	**ug/L**	**1**	1.0	0.15	3/22/2017 13:17	J
Ethylbenzene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	3/22/2017 13:17	J
Ethylene Dibromide (EDB)	**0.020**	**U**	**ug/L**	**1**	0.10	0.020	3/22/2017 13:17	J
Isopropylbenzene	**0.14**	**U**	**ug/L**	**1**	1.0	0.14	3/22/2017 13:17	J
Methyl tert-butyl Ether (MTBE)	**0.17**	**U**	**ug/L**	**1**	1.0	0.17	3/22/2017 13:17	J
Methylene Chloride	**2.5**	**U**	**ug/L**	**1**	5.0	2.5	3/22/2017 13:17	J
Styrene	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	3/22/2017 13:17	J
Tetrachloroethylene (PCE)	**0.36**	**U**	**ug/L**	**1**	1.0	0.36	3/22/2017 13:17	J
Toluene	**0.23**	**U**	**ug/L**	**1**	1.0	0.23	3/22/2017 13:17	J
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	3/22/2017 13:17	J
Trichlorofluoromethane	**0.32**	**U**	**ug/L**	**1**	1.0	0.32	3/22/2017 13:17	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	3/22/2017 13:17	J
Xylene (Total)	**0.53**	**U**	**ug/L**	**1**	2.0	0.53	3/22/2017 13:17	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	3/22/2017 13:17	J
cis-1,3-Dichloropropene	**0.16**	**U**	**ug/L**	**1**	1.0	0.16	3/22/2017 13:17	J
trans-1,2-Dichloroethylene	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	3/22/2017 13:17	J
trans-1,3-Dichloropropylene	**0.18**	**U**	**ug/L**	**1**	1.0	0.18	3/22/2017 13:17	J
1,2-Dichloroethane-d4 (S)	**88**		**%**	**1**	70-128		3/22/2017 13:17	
1,2-Dichloroethane-d4 (S)	**88**		**%**	**1**	70-128		3/22/2017 13:17	
Toluene-d8 (S)	**85**		**%**	**1**	77-119		3/22/2017 13:17	
Toluene-d8 (S)	**85**		**%**	**1**	77-119		3/22/2017 13:17	
Bromofluorobenzene (S)	**99**		**%**	**1**	86-123		3/22/2017 13:17	
Bromofluorobenzene (S)	**99**		**%**	**1**	86-123		3/22/2017 13:17	

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Phone: (904)363-9350
Fax: (904)363-9354

ANALYTICAL RESULTS QUALIFIERS

Workorder: J1702450 NASA KSC LC39B

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
V	Method Blank Contamination
J4	See attached Case Narrative.

LAB QUALIFIERS

J	DOH Certification #E82574(AEL-JAX)(FL NELAC Certification)

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QUALITY CONTROL DATA

Workorder: J1702450 NASA KSC LC39B

QC Batch: EXTj/3280 Analysis Method: SW-846 8082A
QC Batch Method: SW-846 3550B Prepared: 03/13/2017 10:00
Associated Lab Samples: J1702450001

METHOD BLANK: 2295858

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
SEMIVOLATILES				
Aroclor 1016 (PCB-1016)	ug/Kg	6.1	6.1	U
Aroclor 1221 (PCB-1221)	ug/Kg	12	12	U
Aroclor 1232 (PCB-1232)	ug/Kg	29	29	U
Aroclor 1242 (PCB-1242)	ug/Kg	7.8	7.8	U
Aroclor 1248 (PCB-1248)	ug/Kg	21	21	U
Aroclor 1254 (PCB-1254)	ug/Kg	14	14	U
Aroclor 1260 (PCB-1260)	ug/Kg	6.9	6.9	U
Tetrachloro-m-xylene (S)	%	108	44-130	
Decachlorobiphenyl (S)	%	84	61-147	

QC Batch: DGMj/2674 Analysis Method: SW-846 7470A
QC Batch Method: SW-846 7470A Prepared: 03/16/2017 10:00
Associated Lab Samples: J1702450001

METHOD BLANK: 2298402

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Mercury	mg/L	0.000011	0.000011	U

QC Batch: DGMj/2675 Analysis Method: SW-846 6010
QC Batch Method: SW-846 3010A Prepared: 03/16/2017 08:52
Associated Lab Samples: J1702450001

METHOD BLANK: 2298409

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Silver	mg/L	0.00044	0.00044	U
Arsenic	mg/L	0.0085	0.0085	U
Barium	mg/L	0.00028	0.00028	U
Cadmium	mg/L	0.00032	0.00032	U
Chromium	mg/L	0.00051	0.00050	I
Lead	mg/L	0.0013	0.0013	U
Selenium	mg/L	0.0068	0.0068	U

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QUALITY CONTROL DATA

Workorder: J1702450 NASA KSC LC39B

QC Batch: MSVj/3495 Analysis Method: SW-846 8260B
QC Batch Method: SW-846 5030B Prepared: 03/18/2017 14:18
Associated Lab Samples: J1702450001

METHOD BLANK: 2301043

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Vinyl Chloride	mg/L	0.00020	0.00020	U
1,1-Dichloroethylene	mg/L	0.00018	0.00018	U
2-Butanone (MEK)	mg/L	0.00043	0.00043	U
Chloroform	mg/L	0.00018	0.00018	U
1,2-Dichloroethane	mg/L	0.00023	0.00023	U
Carbon Tetrachloride	mg/L	0.00036	0.00036	U
Benzene	mg/L	0.00016	0.00016	U
Trichloroethene	mg/L	0.00029	0.00029	U
Tetrachloroethylene (PCE)	mg/L	0.00036	0.00036	U
Chlorobenzene	mg/L	0.00021	0.00021	U
1,4-Dichlorobenzene	mg/L	0.00022	0.00022	U
1,2-Dichloroethane-d4 (S)	%	88	70-128	
Toluene-d8 (S)	%	90	77-119	
Bromofluorobenzene (S)	%	110	86-123	

QC Batch: MSVj/3527 Analysis Method: SW-846 8260B
QC Batch Method: SW-846 5030B Prepared: 03/22/2017 11:06
Associated Lab Samples: J1702450002

METHOD BLANK: 2304150

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Dichlorodifluoromethane	ug/L	0.15	0.15	U
Chloromethane	ug/L	0.21	0.21	U
Vinyl Chloride	ug/L	0.20	0.20	U
Bromomethane	ug/L	0.24	0.24	U
Chloroethane	ug/L	0.33	0.33	U
Trichlorofluoromethane	ug/L	0.32	0.32	U
Acetone	ug/L	2.1	2.1	U
1,1-Dichloroethylene	ug/L	0.18	0.18	U
Methylene Chloride	ug/L	2.5	2.5	U
1,1,2-Trichlorotrifluoroethane	ug/L	2.2	2.2	U
Carbon Disulfide	ug/L	0.21	0.21	U
trans-1,2-Dichloroethylene	ug/L	0.20	0.20	U
Methyl tert-butyl Ether (MTBE)	ug/L	0.17	0.17	U

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QUALITY CONTROL DATA

Workorder: J1702450 NASA KSC LC39B

METHOD BLANK: 2304150

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
1,1-Dichloroethane	ug/L	0.14	0.14	U
2-Butanone (MEK)	ug/L	0.43	0.43	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Bromochloromethane	ug/L	0.17	0.17	U
Chloroform	ug/L	0.18	0.18	U
1,2-Dichloroethane	ug/L	0.23	0.23	U
1,1,1-Trichloroethane	ug/L	0.22	0.22	U
Carbon Tetrachloride	ug/L	0.36	0.36	U
Benzene	ug/L	0.16	0.16	U
1,2-Dichloropropane	ug/L	0.20	0.20	U
Trichloroethene	ug/L	0.29	0.29	U
Bromodichloromethane	ug/L	0.25	0.25	U
cis-1,3-Dichloropropene	ug/L	0.16	0.16	U
4-Methyl-2-pentanone (MIBK)	ug/L	0.47	0.47	U
trans-1,3-Dichloropropylene	ug/L	0.18	0.18	U
1,1,2-Trichloroethane	ug/L	0.30	0.30	U
Toluene	ug/L	0.23	0.23	U
2-Hexanone	ug/L	0.44	0.44	U
Dibromochloromethane	ug/L	0.33	0.33	U
Ethylene Dibromide (EDB)	ug/L	0.020	0.020	U
Tetrachloroethylene (PCE)	ug/L	0.36	0.36	U
1,1,1,2-Tetrachloroethane	ug/L	0.26	0.26	U
Chlorobenzene	ug/L	0.21	0.21	U
Ethylbenzene	ug/L	0.24	0.24	U
Bromoform	ug/L	0.43	0.43	U
Styrene	ug/L	0.23	0.23	U
1,1,2,2-Tetrachloroethane	ug/L	0.20	0.20	U
Isopropylbenzene	ug/L	0.14	0.14	U
1,3-Dichlorobenzene	ug/L	0.19	0.19	U
1,4-Dichlorobenzene	ug/L	0.22	0.22	U
1,2-Dichlorobenzene	ug/L	0.18	0.18	U
1,2-Dibromo-3-Chloropropane	ug/L	0.11	0.11	U
1,2,4-Trichlorobenzene	ug/L	0.35	0.35	U
1,2,3-Trichlorobenzene	ug/L	0.54	0.54	U
Xylene (Total)	ug/L	0.53	0.53	U
1,2-Dichloroethane-d4 (S)	%	88	70-128	
Toluene-d8 (S)	%	85	77-119	
Bromofluorobenzene (S)	%	104	86-123	

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QUALITY CONTROL DATA QUALIFIERS

Workorder: J1702450 NASA KSC LC39B

QUALITY CONTROL PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
V	Method Blank Contamination
[1]	Spike diluted out.
[2]	Surrogate diluted out.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J1702450 NASA KSC LC39B

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J1702450001	39B-ASWIDW-002.0-20170308	SW-846 3550B	EXTj/3280	SW-846 8082A	GCSj/2577
J1702450001	39B-ASWIDW-002.0-20170308	SW-846 7470A	DGMj/2674	SW-846 7470A	CVAj/1367
J1702450001	39B-ASWIDW-002.0-20170308	SW-846 3010A	DGMj/2675	SW-846 6010	ICPj/1850
J1702450001	39B-ASWIDW-002.0-20170308	SW-846 5030B	MSVj/3495	SW-846 8260B	MSVj/3496
J1702450002	39B-ASWIDW-003.0-20170308	SW-846 5030B	MSVj/3527	SW-846 8260B	MSVj/3528
J1702450001	39B-ASWIDW-002.0-20170308			SM 2540G	WCAj/3744

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☐ Tallahassee: 1288 Cedar Center Drive, Tallahas
☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327

.937.1597

J1702450

Client Name:	Geosyntec Consultants	Project Name:	NASA KSC LC39B
Address:	6770 South Washington Ave, Suite 3	P.O. Number/Project Number:	FR1352E
	Titusville, FL 32780	Project Location:	KSC, FL
Phone:	321.269.5880	FDEP Facility No:	
FAX:		Project Name and Address:	
Contact:	Eric Sager		GNV Profile:
Sampled By:	D. Sizemore		
Turn Around Time:	☒ STANDARD ☐ RUSH	Special Instructions:	
Page	1 of 1	☐ ADaPT ☐ EQuIS ☐ Other	

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	40 ml										LABORATORY I.D. NUMBER
							ANALYSIS REQUIRED	VOC 8260B	TCLP 8260	TCLP RCRA 8 incl HG	8082 PCB							
							Preservation	HCL	—	—	—	Waters	only					
							Field-Filtered?	N										
	LC39B-ASWIDW-0002.0 20170308	Comp	3/8/17	15:30	Soil	2		X	X	X	X							001
	LC39B-ASWIDW-0003.0 20170308	Grab	3/8/17	~~15:30~~ 15:45	GW	3		X										002

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = Ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☒ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1		3/9/17		Bluestreak		
2	Bluestreak	3-10-17	0000		3-10-17	0000
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID:

Contact Person: Phone :

Supplier of Water:

Site-Address:

Monday, March 27, 2017 2:48:58 PM

Advanced Environmental Laboratories, Inc.

6681 Southpoint Parkway
Jacksonville, Florida 32216
Office (904) 363-9350
Fax (904) 363-9354

Project No.: J1702450

Client Name: Geosyntec Consultants

ProjectID: NASA KSC LC39B

I. Receipt

No Exceptions were encountered.

II. Holding Times

Preparation: All holding times were met.

Analysis:

III. Method

Analysis: SW-846 8082A

Preparation: SW-846 3550B

IV. Preparation

Sample preparation proceeded normally.

V. Analysis

A. Calibration: The upper control criterion was exceeded for target analyte Aroclor 1016 in the Continuing Calibration Verification (CCV) standards for analytical batch GCSj:2577, indicating increased sensitivity. The reported field sample results associated with the elevated CCV did not contain the analyte in question. Since the apparent problem equates to a potential high bias, the data quality is not affected. No further corrective action was required.

B. Blanks: All acceptance criteria were met.

C. Surrogates: The control criteria for the following surrogates in J1702249008, and its associated matrix QC: 2295860 (MS) and 2295861 (MSD), are not applicable: Tetrachloro-m-xylene and Decachlorobiphenyl. The analysis of the sample and MS/MSD required a dilution, which results in a surrogate concentration below the Practical Quantitation Limit (PQL). No further corrective action was required.

The upper control criterion was exceeded for surrogate Tetrachloro-m-xylene in sample J1702450001. The error associated with an elevated recovery equates to a high bias. There were no target analytes detected above the Method Detection Limit (MDL) in sample J1702450001. The quality of the sample data is not significantly affected. The outlier surrogate was qualified with a J4 to indicate potential matrix interference

D. Spikes: The control criteria for matrix spike 2295860 (MS) and matrix spike duplicate 2295861 (MSD) recoveries for J1702249008 are not applicable due to matrix interference. The analysis of the sample and MS/MSD required a dilution, which results in spike concentrations below the Practical Quantitation Limit (PQL). Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control.

I certify that this data package is in compliance with the terms and conditions agreed to by Advanced Environmental Laboratories, Inc. and by the client, both technically and for completeness, except for the conditions detailed above. The Quality Assurance Officer, or designee, as verified by the following signature, has authorized release of the data contained in this data package:

_____

Todd Romero, Lab Manager

Advanced
Environmental Laboratories, Inc.

6681 Southpoint Parkway
Jacksonville, Florida 32216
Office (904) 363-9350
Fax (904) 363-9354

No further corrective action was required.

E. Internal Standard: All acceptance criteria were met.

F. Samples: Sample J1702249008, and its associated matrix QC: 2295860 (MS) and 2295861 (MSD), were diluted prior to instrumental analysis due to sample matrix interferences. The extracts were highly colored, viscous, contained sediments, and emitted a strong odor. All of these factors indicated the need to perform a dilution prior to injection into the instrument.

Samples J1702450001 and G1702009001 were acid cleaned as per EPA method 3665a to remove matrix interferences.

G. Other:

I certify that this data package is in compliance with the terms and conditions agreed to by Advanced Environmental Laboratories, Inc. and by the client, both technically and for completeness, except for the conditions detailed above. The Quality Assurance Officer, or designee, as verified by the following signature, has authorized release of the data contained in this data package:

_____

Todd Romero, Lab Manager

Advanced Environmental Laboratories, Inc.

6681 Southpoint Parkway
Jacksonville, Florida 32216
Office (904) 363-9350
Fax (904) 363-9354

Project No.: J1702450

Client Name: Geosyntec Consultants

ProjectID: NASA KSC LC39B

I. Receipt

No Exceptions were encountered.

II. Holding Times

Preparation: All holding times were met.

Analysis: All holding times were met.

III. Method

Analysis: SW-846 8260B

Preparation: SW-846 5030B

IV. Preparation

Sample preparation proceeded normally.

V. Analysis

A. Calibration: All acceptance criteria were met.

B. Blanks: All acceptance criteria were met.

C. Surrogates: All acceptance criteria were met.

D. Spikes: All acceptance criteria were met.

E. Internal Standard: All acceptance criteria were met.

F. Samples: TCLP extration samples J1702450001, J1702552001, and J1702553001 were analyzed at the lowest dilution. In accordance with AEL protocol, all TCLP extractions require a minimal dilution of 10x prior to analysis due to the complex matrices produced during the preparation method.

TCLP sample J1702551001 required a dilution due to the presence of a foamy sample matrix (surfactants). The dilution was necessary to prevent foam over during the purge cycle, resulting in instrument damage.

G. Other:

I certify that this data package is in compliance with the terms and conditions agreed to by Advanced Environmental Laboratories, Inc. and by the client, both technically and for completeness, except for the conditions detailed above. The Quality Assurance Officer, or designee, as verified by the following signature, has authorized release of the data contained in this data package:

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Todd Romero, Lab Manager

Advanced Environmental Laboratories, Inc.

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Jacksonville, Florida 32216
Office (904) 363-9350
Fax (904) 363-9354

Project No.: J1702450

Client Name: Geosyntec Consultants

ProjectID: NASA KSC LC39B

I. Receipt

No Exceptions were encountered.

II. Holding Times

Preparation: All holding times were met.

Analysis:

III. Method

Analysis: SW-846 8260B

Preparation: SW-846 5030B

IV. Preparation

Sample preparation proceeded normally.

V. Analysis

A. Calibration: All acceptance criteria were met.

B. Blanks: All acceptance criteria were met.

C. Surrogates: All acceptance criteria were met.

D. Spikes: All acceptance criteria were met.

E. Internal Standard: All acceptance criteria were met.

F. Samples: J1702924003 and -004 were analyzed at a low level dilution due to the presence of target analytes. All required client limits were achieved in the dilution.

J1702924005 required analysis at dilution due to the presence of target analytes.

G. Other:

I certify that this data package is in compliance with the terms and conditions agreed to by Advanced Environmental Laboratories, Inc. and by the client, both technically and for completeness, except for the conditions detailed above. The Quality Assurance Officer, or designee, as verified by the following signature, has authorized release of the data contained in this data package:

_____

Todd Romero, Lab Manager

JUNE 2017
BACKFILL SAMPLING

LABORATORY ANALYTICAL RESULTS

Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

June 16, 2017

Victor San Agustin
FECC, Inc.
3652 Old Winter Garden Rd.
Orlando, FL 32805

RE: Project: FECC Backfill
Pace Project No.: 35316070

Dear Victor San Agustin:
Enclosed are the analytical results for sample(s) received by the laboratory on June 06, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Rea
todd.rea@pacelabs.com
(386) 676-4805
Project Manager

Enclosures

cc: Don Schill, FECC, Inc.

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Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

CERTIFICATIONS

Project: FECC Backfill
Pace Project No.: 35316070

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
Wyoming Certification: FL NELAC Reciprocity
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

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Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

SAMPLE SUMMARY

Project: FECC Backfill
Pace Project No.: 35316070

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35316070001	**Backfill-1**	Solid	06/06/17 10:47	06/06/17 12:25

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Ormond Beach, FL 32174
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SAMPLE ANALYTE COUNT

Project: FECC Backfill
Pace Project No.: 35316070

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35316070001	**Backfill-1**	EPA 8081	JLG	22	PASI-O
		EPA 8082	JLG	9	PASI-O
		FL-PRO	JGW	3	PASI-O
		EPA 6010	BTS	7	PASI-O
		EPA 7471	MLO	1	PASI-O
		EPA 8270	TWB	74	PASI-O
		EPA 8260	BCH	55	PASI-O
		ASTM D2974-87	RAK	1	PASI-O

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Ormond Beach, FL 32174
(386)672-5668

ANALYTICAL RESULTS

Project: FECC Backfill
Pace Project No.: 35316070

Sample: Backfill-1 **Lab ID: 35316070001** Collected: 06/06/17 10:47 Received: 06/06/17 12:25 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8081 GCS Pesticides	Analytical Method: EPA 8081 Preparation Method: EPA 3546								
Aldrin	**0.00012 U**	mg/kg	0.0035	0.00012	1	06/06/17 16:36	06/07/17 15:02	309-00-2	
alpha-BHC	**0.00014 U**	mg/kg	0.0035	0.00014	1	06/06/17 16:36	06/07/17 15:02	319-84-6	
beta-BHC	**0.00016 U**	mg/kg	0.0035	0.00016	1	06/06/17 16:36	06/07/17 15:02	319-85-7	
delta-BHC	**0.00018 U**	mg/kg	0.0035	0.00018	1	06/06/17 16:36	06/07/17 15:02	319-86-8	
gamma-BHC (Lindane)	**0.00030 U**	mg/kg	0.0035	0.00030	1	06/06/17 16:36	06/07/17 15:02	58-89-9	
Chlordane (Technical)	**0.033 U**	mg/kg	0.035	0.033	1	06/06/17 16:36	06/07/17 15:02	57-74-9	
4,4'-DDD	**0.00027 U**	mg/kg	0.0035	0.00027	1	06/06/17 16:36	06/07/17 15:02	72-54-8	
4,4'-DDE	**0.00013 U**	mg/kg	0.0035	0.00013	1	06/06/17 16:36	06/07/17 15:02	72-55-9	
4,4'-DDT	**0.00020 U**	mg/kg	0.0035	0.00020	1	06/06/17 16:36	06/07/17 15:02	50-29-3	
Dieldrin	**0.000082 U**	mg/kg	0.0035	0.000082	1	06/06/17 16:36	06/07/17 15:02	60-57-1	
Endosulfan I	**0.000051 U**	mg/kg	0.0035	0.000051	1	06/06/17 16:36	06/07/17 15:02	959-98-8	
Endosulfan II	**0.00012 U**	mg/kg	0.0035	0.00012	1	06/06/17 16:36	06/07/17 15:02	33213-65-9	
Endosulfan sulfate	**0.000088 U**	mg/kg	0.0035	0.000088	1	06/06/17 16:36	06/07/17 15:02	1031-07-8	
Endrin	**0.00011 U**	mg/kg	0.0035	0.00011	1	06/06/17 16:36	06/07/17 15:02	72-20-8	
Endrin aldehyde	**0.00014 U**	mg/kg	0.0068	0.00014	1	06/06/17 16:36	06/07/17 15:02	7421-93-4	
Endrin ketone	**0.00016 U**	mg/kg	0.0035	0.00016	1	06/06/17 16:36	06/07/17 15:02	53494-70-5	
Heptachlor	**0.000080 U**	mg/kg	0.0035	0.000080	1	06/06/17 16:36	06/07/17 15:02	76-44-8	
Heptachlor epoxide	**0.00023 U**	mg/kg	0.0035	0.00023	1	06/06/17 16:36	06/07/17 15:02	1024-57-3	
Methoxychlor	**0.0022 U**	mg/kg	0.0035	0.0022	1	06/06/17 16:36	06/07/17 15:02	72-43-5	
Toxaphene	**0.015 U**	mg/kg	0.035	0.015	1	06/06/17 16:36	06/07/17 15:02	8001-35-2	
Surrogates									
Tetrachloro-m-xylene (S)	94	%	53-140		1	06/06/17 16:36	06/07/17 15:02	877-09-8	
Decachlorobiphenyl (S)	76	%	43-157		1	06/06/17 16:36	06/07/17 15:02	2051-24-3	
8082 GCS PCB	Analytical Method: EPA 8082 Preparation Method: EPA 3546								
PCB-1016 (Aroclor 1016)	**0.011 U**	mg/kg	0.017	0.011	1	06/15/17 00:36	06/15/17 12:43	12674-11-2	
PCB-1221 (Aroclor 1221)	**0.0082 U**	mg/kg	0.017	0.0082	1	06/15/17 00:36	06/15/17 12:43	11104-28-2	
PCB-1232 (Aroclor 1232)	**0.0087 U**	mg/kg	0.017	0.0087	1	06/15/17 00:36	06/15/17 12:43	11141-16-5	
PCB-1242 (Aroclor 1242)	**0.0094 U**	mg/kg	0.017	0.0094	1	06/15/17 00:36	06/15/17 12:43	53469-21-9	
PCB-1248 (Aroclor 1248)	**0.011 U**	mg/kg	0.017	0.011	1	06/15/17 00:36	06/15/17 12:43	12672-29-6	
PCB-1254 (Aroclor 1254)	**0.0070 U**	mg/kg	0.017	0.0070	1	06/15/17 00:36	06/15/17 12:43	11097-69-1	
PCB-1260 (Aroclor 1260)	**0.011 U**	mg/kg	0.017	0.011	1	06/15/17 00:36	06/15/17 12:43	11096-82-5	
Surrogates									
Tetrachloro-m-xylene (S)	87	%	59-129		1	06/15/17 00:36	06/15/17 12:43	877-09-8	
Decachlorobiphenyl (S)	53	%	26-172		1	06/15/17 00:36	06/15/17 12:43	2051-24-3	
FL-PRO Soil Microwave	Analytical Method: FL-PRO Preparation Method: EPA 3546								
Petroleum Range Organics	**2.6 U**	mg/kg	4.1	2.6	1	06/07/17 11:10	06/08/17 19:45		
Surrogates									
o-Terphenyl (S)	74	%	62-109		1	06/07/17 11:10	06/08/17 19:45	84-15-1	
N-Pentatriacontane (S)	78	%	42-159		1	06/07/17 11:10	06/08/17 19:45	630-07-09	

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

ANALYTICAL RESULTS

Project: FECC Backfill
Pace Project No.: 35316070

Sample: Backfill-1 **Lab ID: 35316070001** Collected: 06/06/17 10:47 Received: 06/06/17 12:25 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Arsenic	**1.1**	mg/kg	0.54	0.27	1	06/11/17 17:15	06/12/17 00:43	7440-38-2	
Barium	**18.1**	mg/kg	0.54	0.27	1	06/11/17 17:15	06/12/17 00:43	7440-39-3	
Cadmium	**0.080**	mg/kg	0.054	0.027	1	06/11/17 17:15	06/12/17 00:43	7440-43-9	
Chromium	**3.1**	mg/kg	0.27	0.13	1	06/11/17 17:15	06/12/17 00:43	7440-47-3	
Lead	**1.7**	mg/kg	0.54	0.27	1	06/11/17 17:15	06/12/17 00:43	7439-92-1	
Selenium	**0.40 U**	mg/kg	0.81	0.40	1	06/11/17 17:15	06/12/17 00:43	7782-49-2	
Silver	**0.13 U**	mg/kg	0.27	0.13	1	06/11/17 17:15	06/12/17 00:43	7440-22-4	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471								
Mercury	**0.0048 U**	mg/kg	0.0096	0.0048	1	06/12/17 08:58	06/14/17 15:56	7439-97-6	
8270 MSSV Full List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
Acenaphthene	**0.012 U**	mg/kg	0.034	0.012	1	06/07/17 11:30	06/08/17 11:29	83-32-9	
Acenaphthylene	**0.011 U**	mg/kg	0.034	0.011	1	06/07/17 11:30	06/08/17 11:29	208-96-8	
Aniline	**0.031 U**	mg/kg	0.17	0.031	1	06/07/17 11:30	06/08/17 11:29	62-53-3	
Anthracene	**0.010 U**	mg/kg	0.034	0.010	1	06/07/17 11:30	06/08/17 11:29	120-12-7	
Benzo(a)anthracene	**0.0098 U**	mg/kg	0.034	0.0098	1	06/07/17 11:30	06/08/17 11:29	56-55-3	
Benzo(a)pyrene	**0.0040 U**	mg/kg	0.034	0.0040	1	06/07/17 11:30	06/08/17 11:29	50-32-8	
Benzo(b)fluoranthene	**0.025 U**	mg/kg	0.034	0.025	1	06/07/17 11:30	06/08/17 11:29	205-99-2	
Benzo(g,h,i)perylene	**0.012 U**	mg/kg	0.034	0.012	1	06/07/17 11:30	06/08/17 11:29	191-24-2	
Benzo(k)fluoranthene	**0.0073 U**	mg/kg	0.034	0.0073	1	06/07/17 11:30	06/08/17 11:29	207-08-9	
Benzyl alcohol	**0.031 U**	mg/kg	0.17	0.031	1	06/07/17 11:30	06/08/17 11:29	100-51-6	
4-Bromophenylphenyl ether	**0.020 U**	mg/kg	0.17	0.020	1	06/07/17 11:30	06/08/17 11:29	101-55-3	
Butylbenzylphthalate	**0.020 U**	mg/kg	0.17	0.020	1	06/07/17 11:30	06/08/17 11:29	85-68-7	
4-Chloro-3-methylphenol	**0.021 U**	mg/kg	0.68	0.021	1	06/07/17 11:30	06/08/17 11:29	59-50-7	
4-Chloroaniline	**0.028 U**	mg/kg	0.17	0.028	1	06/07/17 11:30	06/08/17 11:29	106-47-8	
bis(2-Chloroethoxy)methane	**0.028 U**	mg/kg	0.17	0.028	1	06/07/17 11:30	06/08/17 11:29	111-91-1	
bis(2-Chloroethyl) ether	**0.027 U**	mg/kg	0.17	0.027	1	06/07/17 11:30	06/08/17 11:29	111-44-4	
bis(2-Chloroisopropyl) ether	**0.027 U**	mg/kg	0.17	0.027	1	06/07/17 11:30	06/08/17 11:29	108-60-1	
2-Chloronaphthalene	**0.031 U**	mg/kg	0.17	0.031	1	06/07/17 11:30	06/08/17 11:29	91-58-7	
2-Chlorophenol	**0.026 U**	mg/kg	0.17	0.026	1	06/07/17 11:30	06/08/17 11:29	95-57-8	
4-Chlorophenylphenyl ether	**0.022 U**	mg/kg	0.17	0.022	1	06/07/17 11:30	06/08/17 11:29	7005-72-3	
Chrysene	**0.012 U**	mg/kg	0.034	0.012	1	06/07/17 11:30	06/08/17 11:29	218-01-9	
Dibenz(a,h)anthracene	**0.017 U**	mg/kg	0.034	0.017	1	06/07/17 11:30	06/08/17 11:29	53-70-3	
Dibenzofuran	**0.024 U**	mg/kg	0.17	0.024	1	06/07/17 11:30	06/08/17 11:29	132-64-9	
1,2-Dichlorobenzene	**0.026 U**	mg/kg	0.17	0.026	1	06/07/17 11:30	06/08/17 11:29	95-50-1	
1,3-Dichlorobenzene	**0.024 U**	mg/kg	0.17	0.024	1	06/07/17 11:30	06/08/17 11:29	541-73-1	
1,4-Dichlorobenzene	**0.025 U**	mg/kg	0.17	0.025	1	06/07/17 11:30	06/08/17 11:29	106-46-7	
3,3'-Dichlorobenzidine	**0.018 U**	mg/kg	0.68	0.018	1	06/07/17 11:30	06/08/17 11:29	91-94-1	
2,4-Dichlorophenol	**0.024 U**	mg/kg	0.17	0.024	1	06/07/17 11:30	06/08/17 11:29	120-83-2	
Diethylphthalate	**0.024 U**	mg/kg	0.17	0.024	1	06/07/17 11:30	06/08/17 11:29	84-66-2	
2,4-Dimethylphenol	**0.031 U**	mg/kg	0.17	0.031	1	06/07/17 11:30	06/08/17 11:29	105-67-9	
Dimethylphthalate	**0.018 U**	mg/kg	0.17	0.018	1	06/07/17 11:30	06/08/17 11:29	131-11-3	
Di-n-butylphthalate	**0.022 U**	mg/kg	0.17	0.022	1	06/07/17 11:30	06/08/17 11:29	84-74-2	
4,6-Dinitro-2-methylphenol	**0.019 U**	mg/kg	0.68	0.019	1	06/07/17 11:30	06/08/17 11:29	534-52-1	J(L1)

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

ANALYTICAL RESULTS

Project: FECC Backfill
Pace Project No.: 35316070

Sample: Backfill-1 **Lab ID: 35316070001** Collected: 06/06/17 10:47 Received: 06/06/17 12:25 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Full List Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546								
2,4-Dinitrophenol	**0.050 U**	mg/kg	0.68	0.050	1	06/07/17 11:30	06/08/17 11:29	51-28-5	J(L1), J(M0)
2,4-Dinitrotoluene	**0.021 U**	mg/kg	0.17	0.021	1	06/07/17 11:30	06/08/17 11:29	121-14-2	
2,6-Dinitrotoluene	**0.017 U**	mg/kg	0.17	0.017	1	06/07/17 11:30	06/08/17 11:29	606-20-2	
Di-n-octylphthalate	**0.018 U**	mg/kg	0.17	0.018	1	06/07/17 11:30	06/08/17 11:29	117-84-0	
1,2-Diphenylhydrazine	**0.018 U**	mg/kg	0.17	0.018	1	06/07/17 11:30	06/08/17 11:29	122-66-7	
bis(2-Ethylhexyl)phthalate	**0.025 U**	mg/kg	0.17	0.025	1	06/07/17 11:30	06/08/17 11:29	117-81-7	
Fluoranthene	**0.011 U**	mg/kg	0.034	0.011	1	06/07/17 11:30	06/08/17 11:29	206-44-0	
Fluorene	**0.015 U**	mg/kg	0.034	0.015	1	06/07/17 11:30	06/08/17 11:29	86-73-7	
Hexachloro-1,3-butadiene	**0.025 U**	mg/kg	0.17	0.025	1	06/07/17 11:30	06/08/17 11:29	87-68-3	
Hexachlorobenzene	**0.020 U**	mg/kg	0.17	0.020	1	06/07/17 11:30	06/08/17 11:29	118-74-1	
Hexachlorocyclopentadiene	**0.042 U**	mg/kg	0.68	0.042	1	06/07/17 11:30	06/08/17 11:29	77-47-4	J(L2), J(M0)
Hexachloroethane	**0.032 U**	mg/kg	0.17	0.032	1	06/07/17 11:30	06/08/17 11:29	67-72-1	
Indeno(1,2,3-cd)pyrene	**0.017 U**	mg/kg	0.034	0.017	1	06/07/17 11:30	06/08/17 11:29	193-39-5	
Isophorone	**0.026 U**	mg/kg	0.17	0.026	1	06/07/17 11:30	06/08/17 11:29	78-59-1	
1-Methylnaphthalene	**0.012 U**	mg/kg	0.034	0.012	1	06/07/17 11:30	06/08/17 11:29	90-12-0	
2-Methylnaphthalene	**0.014 U**	mg/kg	0.034	0.014	1	06/07/17 11:30	06/08/17 11:29	91-57-6	
2-Methylphenol(o-Cresol)	**0.025 U**	mg/kg	0.17	0.025	1	06/07/17 11:30	06/08/17 11:29	95-48-7	
3&4-Methylphenol(m&p Cresol)	**0.052 U**	mg/kg	0.17	0.052	1	06/07/17 11:30	06/08/17 11:29		
Naphthalene	**0.011 U**	mg/kg	0.034	0.011	1	06/07/17 11:30	06/08/17 11:29	91-20-3	
2-Nitroaniline	**0.045 U**	mg/kg	0.17	0.045	1	06/07/17 11:30	06/08/17 11:29	88-74-4	
3-Nitroaniline	**0.019 U**	mg/kg	0.17	0.019	1	06/07/17 11:30	06/08/17 11:29	99-09-2	
4-Nitroaniline	**0.030 U**	mg/kg	0.17	0.030	1	06/07/17 11:30	06/08/17 11:29	100-01-6	
Nitrobenzene	**0.027 U**	mg/kg	0.17	0.027	1	06/07/17 11:30	06/08/17 11:29	98-95-3	
2-Nitrophenol	**0.028 U**	mg/kg	0.17	0.028	1	06/07/17 11:30	06/08/17 11:29	88-75-5	
4-Nitrophenol	**0.026 U**	mg/kg	0.17	0.026	1	06/07/17 11:30	06/08/17 11:29	100-02-7	
N-Nitrosodimethylamine	**0.026 U**	mg/kg	0.17	0.026	1	06/07/17 11:30	06/08/17 11:29	62-75-9	
N-Nitroso-di-n-propylamine	**0.025 U**	mg/kg	0.17	0.025	1	06/07/17 11:30	06/08/17 11:29	621-64-7	
N-Nitrosodiphenylamine	**0.021 U**	mg/kg	0.17	0.021	1	06/07/17 11:30	06/08/17 11:29	86-30-6	
Pentachlorophenol	**0.022 U**	mg/kg	0.68	0.022	1	06/07/17 11:30	06/08/17 11:29	87-86-5	J(L1)
Phenanthrene	**0.013 U**	mg/kg	0.034	0.013	1	06/07/17 11:30	06/08/17 11:29	85-01-8	
Phenol	**0.032 U**	mg/kg	0.17	0.032	1	06/07/17 11:30	06/08/17 11:29	108-95-2	
Pyrene	**0.017 U**	mg/kg	0.034	0.017	1	06/07/17 11:30	06/08/17 11:29	129-00-0	
1,2,4-Trichlorobenzene	**0.029 U**	mg/kg	0.17	0.029	1	06/07/17 11:30	06/08/17 11:29	120-82-1	
2,4,5-Trichlorophenol	**0.023 U**	mg/kg	0.17	0.023	1	06/07/17 11:30	06/08/17 11:29	95-95-4	
2,4,6-Trichlorophenol	**0.026 U**	mg/kg	0.17	0.026	1	06/07/17 11:30	06/08/17 11:29	88-06-2	
Surrogates									
Nitrobenzene-d5 (S)	67	%	16-123		1	06/07/17 11:30	06/08/17 11:29	4165-60-0	
2-Fluorobiphenyl (S)	83	%	32-129		1	06/07/17 11:30	06/08/17 11:29	321-60-8	
Terphenyl-d14 (S)	85	%	38-138		1	06/07/17 11:30	06/08/17 11:29	1718-51-0	
Phenol-d6 (S)	69	%	10-117		1	06/07/17 11:30	06/08/17 11:29	13127-88-3	
2-Fluorophenol (S)	71	%	10-113		1	06/07/17 11:30	06/08/17 11:29	367-12-4	
2,4,6-Tribromophenol (S)	81	%	10-175		1	06/07/17 11:30	06/08/17 11:29	118-79-6	

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

ANALYTICAL RESULTS

Project: FECC Backfill
Pace Project No.: 35316070

Sample: Backfill-1 **Lab ID: 35316070001** Collected: 06/06/17 10:47 Received: 06/06/17 12:25 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5035 Low Level	Analytical Method: EPA 8260								
Acetone	**0.17**	mg/kg	0.020	0.0098	1		06/06/17 17:07	67-64-1	
Acetonitrile	**0.024 U**	mg/kg	0.049	0.024	1		06/06/17 17:07	75-05-8	
Benzene	**0.0025 U**	mg/kg	0.0049	0.0025	1		06/06/17 17:07	71-43-2	
Bromochloromethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	74-97-5	
Bromodichloromethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	75-27-4	
Bromoform	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	75-25-2	
Bromomethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	74-83-9	
2-Butanone (MEK)	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	78-93-3	
Carbon disulfide	**0.0040 I**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	75-15-0	
Carbon tetrachloride	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	56-23-5	
Chlorobenzene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	108-90-7	
Chloroethane	**0.0035 U**	mg/kg	0.0049	0.0035	1		06/06/17 17:07	75-00-3	
Chloroform	**0.0029 U**	mg/kg	0.0049	0.0029	1		06/06/17 17:07	67-66-3	
Chloromethane	**0.0027 U**	mg/kg	0.0049	0.0027	1		06/06/17 17:07	74-87-3	
1,2-Dibromo-3-chloropropane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	96-12-8	
Dibromochloromethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	124-48-1	
1,2-Dibromoethane (EDB)	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	106-93-4	
Dibromomethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	74-95-3	
1,2-Dichlorobenzene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	95-50-1	
1,4-Dichlorobenzene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	106-46-7	
trans-1,4-Dichloro-2-butene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	110-57-6	
1,1-Dichloroethane	**0.0027 U**	mg/kg	0.0049	0.0027	1		06/06/17 17:07	75-34-3	
1,2-Dichloroethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	107-06-2	
1,2-Dichloroethene (Total)	**0.0030 U**	mg/kg	0.0049	0.0030	1		06/06/17 17:07	540-59-0	
1,1-Dichloroethene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	75-35-4	
cis-1,2-Dichloroethene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	156-59-2	
trans-1,2-Dichloroethene	**0.0030 U**	mg/kg	0.0049	0.0030	1		06/06/17 17:07	156-60-5	
1,2-Dichloropropane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	78-87-5	
cis-1,3-Dichloropropene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	10061-01-5	
trans-1,3-Dichloropropene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	10061-02-6	
Ethylbenzene	**0.0028 U**	mg/kg	0.0049	0.0028	1		06/06/17 17:07	100-41-4	
2-Hexanone	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	591-78-6	
Iodomethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	74-88-4	
Isopropylbenzene (Cumene)	**0.0028 U**	mg/kg	0.0049	0.0028	1		06/06/17 17:07	98-82-8	
Methylene Chloride	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	75-09-2	
4-Methyl-2-pentanone (MIBK)	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	108-10-1	
Methyl-tert-butyl ether	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	1634-04-4	
Styrene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	100-42-5	
1,1,1,2-Tetrachloroethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	630-20-6	
1,1,2,2-Tetrachloroethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	79-34-5	
Tetrachloroethene	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	127-18-4	
Toluene	**0.0026 U**	mg/kg	0.0049	0.0026	1		06/06/17 17:07	108-88-3	
1,1,1-Trichloroethane	**0.0027 U**	mg/kg	0.0049	0.0027	1		06/06/17 17:07	71-55-6	
1,1,2-Trichloroethane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	79-00-5	
Trichloroethene	**0.0028 U**	mg/kg	0.0049	0.0028	1		06/06/17 17:07	79-01-6	

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

ANALYTICAL RESULTS

Project: FECC Backfill
Pace Project No.: 35316070

Sample: Backfill-1 **Lab ID: 35316070001** Collected: 06/06/17 10:47 Received: 06/06/17 12:25 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV 5035 Low Level	Analytical Method: EPA 8260								
Trichlorofluoromethane	**0.0027 U**	mg/kg	0.0049	0.0027	1		06/06/17 17:07	75-69-4	
1,2,3-Trichloropropane	**0.0024 U**	mg/kg	0.0049	0.0024	1		06/06/17 17:07	96-18-4	
Vinyl acetate	**0.0025 U**	mg/kg	0.0049	0.0025	1		06/06/17 17:07	108-05-4	
Vinyl chloride	**0.0026 U**	mg/kg	0.0049	0.0026	1		06/06/17 17:07	75-01-4	
Xylene (Total)	**0.0050 U**	mg/kg	0.015	0.0050	1		06/06/17 17:07	1330-20-7	
m&p-Xylene	**0.0050 U**	mg/kg	0.0098	0.0050	1		06/06/17 17:07	179601-23-1	
o-Xylene	**0.0025 U**	mg/kg	0.0049	0.0025	1		06/06/17 17:07	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	100	%	55-148		1		06/06/17 17:07	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-131		1		06/06/17 17:07	17060-07-0	
Toluene-d8 (S)	103	%	84-117		1		06/06/17 17:07	2037-26-5	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**3.0**	%	0.10	0.10	1		06/08/17 12:03		

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QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

QC Batch: 374223 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 35316070001

METHOD BLANK: 2024407 Matrix: Solid
Associated Lab Samples: 35316070001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Mercury	mg/kg	0.0047 U	0.0094	0.0047	06/14/17 15:52	

LABORATORY CONTROL SAMPLE: 2024408

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.098	0.091	92	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2024409 2024410

Parameter	Units	35316070001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	0.0048 U	.1	.099	0.087	0.088	84	86	80-120	1	20	

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QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

QC Batch: 374187
QC Batch Method: EPA 3050
Analysis Method: EPA 6010
Analysis Description: 6010 MET Solid
Associated Lab Samples: 35316070001

METHOD BLANK: 2024279
Matrix: Solid
Associated Lab Samples: 35316070001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Arsenic	mg/kg	0.23 U	0.46	0.23	06/13/17 05:53	
Barium	mg/kg	0.23 U	0.46	0.23	06/13/17 05:53	
Cadmium	mg/kg	0.023 U	0.046	0.023	06/13/17 05:53	
Chromium	mg/kg	0.11 U	0.23	0.11	06/13/17 05:53	
Lead	mg/kg	0.23 U	0.46	0.23	06/13/17 05:53	
Selenium	mg/kg	0.34 U	0.69	0.34	06/13/17 05:53	
Silver	mg/kg	0.11 U	0.23	0.11	06/13/17 05:53	

LABORATORY CONTROL SAMPLE: 2024280

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	30.5	29.9	98	80-120	
Barium	mg/kg	30.5	31.8	104	80-120	
Cadmium	mg/kg	3	3.1	102	80-120	
Chromium	mg/kg	15.2	16.3	107	80-120	
Lead	mg/kg	30.5	31.4	103	80-120	
Selenium	mg/kg	45.7	43.1	94	80-120	
Silver	mg/kg	15.2	15.4	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2024281 2024282

Parameter	Units	35315397003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/kg	1.4 U	146	151	127	127	86	84	75-125	0	20	
Barium	mg/kg	91.0	146	151	240	241	102	99	75-125	0	20	
Cadmium	mg/kg	0.44	14.5	15	14.7	14.8	97	95	75-125	1	20	
Chromium	mg/kg	12.6	73.5	75.6	88.4	89.5	103	102	75-125	1	20	
Lead	mg/kg	6.0	146	151	146	149	96	94	75-125	2	20	
Selenium	mg/kg	5.4	220	227	152	155	66	66	75-125	2	20	J(M1)
Silver	mg/kg	1.2 I	73.5	75.6	72.5	74.0	97	96	75-125	2	20	

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(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

QC Batch: 373102
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 5035 Low Level
Associated Lab Samples: 35316070001

METHOD BLANK: 2016814
Matrix: Solid
Associated Lab Samples: 35316070001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,1,1-Trichloroethane	mg/kg	0.0027 U	0.0050	0.0027	06/06/17 12:46	
1,1,2,2-Tetrachloroethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,1,2-Trichloroethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,1-Dichloroethane	mg/kg	0.0027 U	0.0050	0.0027	06/06/17 12:46	
1,1-Dichloroethene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,2,3-Trichloropropane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,2-Dibromo-3-chloropropane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,2-Dibromoethane (EDB)	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,2-Dichlorobenzene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,2-Dichloroethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,2-Dichloroethene (Total)	mg/kg	0.0030 U	0.0050	0.0030	06/06/17 12:46	
1,2-Dichloropropane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
1,4-Dichlorobenzene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
2-Butanone (MEK)	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
2-Hexanone	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
4-Methyl-2-pentanone (MIBK)	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Acetone	mg/kg	0.0099 U	0.020	0.0099	06/06/17 12:46	
Acetonitrile	mg/kg	0.025 U	0.050	0.025	06/06/17 12:46	
Benzene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Bromochloromethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Bromodichloromethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Bromoform	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Bromomethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Carbon disulfide	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Carbon tetrachloride	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Chlorobenzene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Chloroethane	mg/kg	0.0036 U	0.0050	0.0036	06/06/17 12:46	
Chloroform	mg/kg	0.0029 U	0.0050	0.0029	06/06/17 12:46	
Chloromethane	mg/kg	0.0028 U	0.0050	0.0028	06/06/17 12:46	
cis-1,2-Dichloroethene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
cis-1,3-Dichloropropene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Dibromochloromethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Dibromomethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Ethylbenzene	mg/kg	0.0028 U	0.0050	0.0028	06/06/17 12:46	
Iodomethane	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Isopropylbenzene (Cumene)	mg/kg	0.0029 U	0.0050	0.0029	06/06/17 12:46	
m&p-Xylene	mg/kg	0.0051 U	0.0099	0.0051	06/06/17 12:46	
Methyl-tert-butyl ether	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Methylene Chloride	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
o-Xylene	mg/kg	0.0026 U	0.0050	0.0026	06/06/17 12:46	

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

METHOD BLANK: 2016814 Matrix: Solid
Associated Lab Samples: 35316070001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Styrene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Tetrachloroethene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Toluene	mg/kg	0.0027 U	0.0050	0.0027	06/06/17 12:46	
trans-1,2-Dichloroethene	mg/kg	0.0030 U	0.0050	0.0030	06/06/17 12:46	
trans-1,3-Dichloropropene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
trans-1,4-Dichloro-2-butene	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Trichloroethene	mg/kg	0.0028 U	0.0050	0.0028	06/06/17 12:46	
Trichlorofluoromethane	mg/kg	0.0027 U	0.0050	0.0027	06/06/17 12:46	
Vinyl acetate	mg/kg	0.0025 U	0.0050	0.0025	06/06/17 12:46	
Vinyl chloride	mg/kg	0.0027 U	0.0050	0.0027	06/06/17 12:46	
Xylene (Total)	mg/kg	0.0051 U	0.015	0.0051	06/06/17 12:46	
1,2-Dichloroethane-d4 (S)	%	97	80-131		06/06/17 12:46	
4-Bromofluorobenzene (S)	%	98	55-148		06/06/17 12:46	
Toluene-d8 (S)	%	102	84-117		06/06/17 12:46	

LABORATORY CONTROL SAMPLE: 2016815

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	.02	0.018	92	70-130	
1,1,1-Trichloroethane	mg/kg	.02	0.020	98	68-130	
1,1,2,2-Tetrachloroethane	mg/kg	.02	0.019	94	70-130	
1,1,2-Trichloroethane	mg/kg	.02	0.019	97	70-130	
1,1-Dichloroethane	mg/kg	.02	0.020	100	69-130	
1,1-Dichloroethene	mg/kg	.02	0.021	105	67-130	
1,2,3-Trichloropropane	mg/kg	.02	0.020	99	70-130	
1,2-Dibromo-3-chloropropane	mg/kg	.02	0.016	80	69-130	
1,2-Dibromoethane (EDB)	mg/kg	.02	0.019	94	70-130	
1,2-Dichlorobenzene	mg/kg	.02	0.018	93	70-130	
1,2-Dichloroethane	mg/kg	.02	0.020	102	70-130	
1,2-Dichloroethene (Total)	mg/kg	.04	0.043	109	70-130	
1,2-Dichloropropane	mg/kg	.02	0.020	100	70-130	
1,4-Dichlorobenzene	mg/kg	.02	0.018	92	70-130	
2-Butanone (MEK)	mg/kg	.04	0.041	102	51-161	
2-Hexanone	mg/kg	.04	0.034	86	59-137	
4-Methyl-2-pentanone (MIBK)	mg/kg	.04	0.040	101	64-143	
Acetone	mg/kg	.04	0.060	150	32-175	
Acetonitrile	mg/kg	.2	0.20	103	68-131	
Benzene	mg/kg	.02	0.021	105	70-130	
Bromochloromethane	mg/kg	.02	0.021	105	70-130	
Bromodichloromethane	mg/kg	.02	0.019	97	70-130	
Bromoform	mg/kg	.02	0.014	70	70-130	
Bromomethane	mg/kg	.02	0.021	103	42-156	
Carbon disulfide	mg/kg	.02	0.020	100	49-152	
Carbon tetrachloride	mg/kg	.02	0.019	95	65-132	

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(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

LABORATORY CONTROL SAMPLE: 2016815

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	mg/kg	.02	0.019	95	70-130	
Chloroethane	mg/kg	.02	0.022	111	56-146	
Chloroform	mg/kg	.02	0.020	101	69-130	
Chloromethane	mg/kg	.02	0.021	107	50-145	
cis-1,2-Dichloroethene	mg/kg	.02	0.020	101	70-130	
cis-1,3-Dichloropropene	mg/kg	.02	0.020	99	70-130	
Dibromochloromethane	mg/kg	.02	0.018	90	70-130	
Dibromomethane	mg/kg	.02	0.020	101	68-133	
Ethylbenzene	mg/kg	.02	0.019	93	70-130	
Iodomethane	mg/kg	.04	0.047	117	59-142	
Isopropylbenzene (Cumene)	mg/kg	.02	0.018	93	70-130	
m&p-Xylene	mg/kg	.04	0.036	90	70-130	
Methyl-tert-butyl ether	mg/kg	.02	0.020	99	70-130	
Methylene Chloride	mg/kg	.02	0.019	98	40-159	
o-Xylene	mg/kg	.02	0.019	94	70-130	
Styrene	mg/kg	.02	0.018	91	70-130	
Tetrachloroethene	mg/kg	.02	0.018	91	63-130	
Toluene	mg/kg	.02	0.019	94	70-130	
trans-1,2-Dichloroethene	mg/kg	.02	0.023	116	70-130	
trans-1,3-Dichloropropene	mg/kg	.02	0.018	91	70-130	
trans-1,4-Dichloro-2-butene	mg/kg	.02	0.018	90	63-132	
Trichloroethene	mg/kg	.02	0.021	103	69-130	
Trichlorofluoromethane	mg/kg	.02	0.024	122	67-130	
Vinyl acetate	mg/kg	.02	0.022	108	53-146	
Vinyl chloride	mg/kg	.02	0.022	112	67-130	
Xylene (Total)	mg/kg	.06	0.054	91	70-130	
1,2-Dichloroethane-d4 (S)	%			100	80-131	
4-Bromofluorobenzene (S)	%			99	55-148	
Toluene-d8 (S)	%			103	84-117	

MATRIX SPIKE SAMPLE: 2017385

Parameter	Units	35315822002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	0.0029 U	.025	0.026	105	42-130	
1,1,1-Trichloroethane	mg/kg	0.0032 U	.025	0.032	128	42-131	
1,1,2,2-Tetrachloroethane	mg/kg	0.0029 U	.025	0.028	113	50-130	
1,1,2-Trichloroethane	mg/kg	0.0029 U	.025	0.029	118	59-130	
1,1-Dichloroethane	mg/kg	0.0032 U	.025	0.032	130	50-130	
1,1-Dichloroethene	mg/kg	0.0029 U	.025	0.035	143	51-130	J(M1)
1,2,3-Trichloropropane	mg/kg	0.0029 U	.025	0.030	120	49-130	
1,2-Dibromo-3-chloropropane	mg/kg	0.0029 U	.025	0.021	86	28-134	
1,2-Dibromoethane (EDB)	mg/kg	0.0029 U	.025	0.028	113	30-134	
1,2-Dichlorobenzene	mg/kg	0.0029 U	.025	0.020	80	20-134	
1,2-Dichloroethane	mg/kg	0.0029 U	.025	0.032	128	57-130	
1,2-Dichloroethene (Total)	mg/kg	0.0036 U	.05	0.065	131	70-130	

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(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

MATRIX SPIKE SAMPLE: 2017385

Parameter	Units	35315822002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloropropane	mg/kg	0.0029 U	.025	0.032	128	52-130	
1,4-Dichlorobenzene	mg/kg	0.0029 U	.025	0.019	77	20-134	
2-Butanone (MEK)	mg/kg	0.0029 U	.05	0.063	126	20-217	
2-Hexanone	mg/kg	0.0029 U	.05	0.051	103	20-136	
4-Methyl-2-pentanone (MIBK)	mg/kg	0.0029 U	.05	0.060	121	21-151	
Acetone	mg/kg	0.32	.05	0.31	-26	20-219	J(M1)
Acetonitrile	mg/kg	0.029 U	.25	0.30	122	32-150	
Benzene	mg/kg	0.0030 U	.025	0.033	131	24-141	
Bromochloromethane	mg/kg	0.0029 U	.025	0.033	134	53-141	
Bromodichloromethane	mg/kg	0.0029 U	.025	0.029	117	20-155	
Bromoform	mg/kg	0.0029 U	.025	0.018	74	30-130	
Bromomethane	mg/kg	0.0029 U	.025	0.032	129	22-152	
Carbon disulfide	mg/kg	0.0029 U	.025	0.031	127	20-160	
Carbon tetrachloride	mg/kg	0.0029 U	.025	0.028	115	23-141	
Chlorobenzene	mg/kg	0.0029 U	.025	0.025	101	34-130	
Chloroethane	mg/kg	0.0042 U	.025	0.032	128	43-146	
Chloroform	mg/kg	0.0035 U	.025	0.032	129	42-132	
Chloromethane	mg/kg	0.0033 U	.025	0.033	133	31-144	
cis-1,2-Dichloroethene	mg/kg	0.0029 U	.025	0.032	127	45-131	
cis-1,3-Dichloropropene	mg/kg	0.0029 U	.025	0.030	121	33-132	
Dibromochloromethane	mg/kg	0.0029 U	.025	0.025	102	20-151	
Dibromomethane	mg/kg	0.0029 U	.025	0.031	126	49-137	
Ethylbenzene	mg/kg	0.0033 U	.025	0.024	97	30-130	
Iodomethane	mg/kg	0.0029 U	.05	0.074	149	20-155	
Isopropylbenzene (Cumene)	mg/kg	0.0034 U	.025	0.022	90	28-130	
m&p-Xylene	mg/kg	0.0061 U	.05	0.045	91	27-150	
Methyl-tert-butyl ether	mg/kg	0.0029 U	.025	0.028	114	31-156	
Methylene Chloride	mg/kg	0.0029 U	.025	0.017	67	20-150	
o-Xylene	mg/kg	0.0030 U	.025	0.023	92	27-150	
Styrene	mg/kg	0.0029 U	.025	0.023	91	20-137	
Tetrachloroethene	mg/kg	0.0029 U	.025	0.025	102	23-144	
Toluene	mg/kg	0.0032 U	.025	0.028	110	24-137	
trans-1,2-Dichloroethene	mg/kg	0.0036 U	.025	0.034	136	50-130	J(M1)
trans-1,3-Dichloropropene	mg/kg	0.0029 U	.025	0.027	110	33-130	
trans-1,4-Dichloro-2-butene	mg/kg	0.0029 U	.025	0.026	104	20-150	
Trichloroethene	mg/kg	0.0033 U	.025	0.031	125	42-130	
Trichlorofluoromethane	mg/kg	0.0032 U	.025	0.035	142	40-130	J(M1)
Vinyl acetate	mg/kg	0.0030 U	.025	0.014	55	20-156	
Vinyl chloride	mg/kg	0.0032 U	.025	0.035	140	47-130	J(M1)
Xylene (Total)	mg/kg	0.0061 U	.075	0.068	91	26-130	
1,2-Dichloroethane-d4 (S)	%				98	80-131	
4-Bromofluorobenzene (S)	%				96	55-148	
Toluene-d8 (S)	%				102	84-117	

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

SAMPLE DUPLICATE: 2017386

Parameter	Units	35315822003 Result	Dup Result	RPD	Max RPD	Qualifiers
1,1,1,2-Tetrachloroethane	mg/kg	0.0029 U	0.0027 U		40	
1,1,1-Trichloroethane	mg/kg	0.0031 U	0.0030 U		40	
1,1,2,2-Tetrachloroethane	mg/kg	0.0029 U	0.0027 U		40	
1,1,2-Trichloroethane	mg/kg	0.0029 U	0.0027 U		40	
1,1-Dichloroethane	mg/kg	0.0031 U	0.0030 U		40	
1,1-Dichloroethene	mg/kg	0.0029 U	0.0027 U		40	
1,2,3-Trichloropropane	mg/kg	0.0029 U	0.0027 U		40	
1,2-Dibromo-3-chloropropane	mg/kg	0.0029 U	0.0027 U		40	
1,2-Dibromoethane (EDB)	mg/kg	0.0029 U	0.0027 U		40	
1,2-Dichlorobenzene	mg/kg	0.0029 U	0.0027 U		40	
1,2-Dichloroethane	mg/kg	0.0029 U	0.0027 U		40	
1,2-Dichloroethene (Total)	mg/kg	0.0035 U	0.0033 U		40	
1,2-Dichloropropane	mg/kg	0.0029 U	0.0027 U		40	
1,4-Dichlorobenzene	mg/kg	0.0029 U	0.0027 U		40	
2-Butanone (MEK)	mg/kg	0.0029 U	0.0027 U		40	
2-Hexanone	mg/kg	0.0029 U	0.0027 U		40	
4-Methyl-2-pentanone (MIBK)	mg/kg	0.0029 U	0.0027 U		40	
Acetone	mg/kg	0.20	0.27	26	40	
Acetonitrile	mg/kg	0.029 U	0.027 U		40	
Benzene	mg/kg	0.0029 U	0.0028 U		40	
Bromochloromethane	mg/kg	0.0029 U	0.0027 U		40	
Bromodichloromethane	mg/kg	0.0029 U	0.0027 U		40	
Bromoform	mg/kg	0.0029 U	0.0027 U		40	
Bromomethane	mg/kg	0.0029 U	0.0027 U		40	
Carbon disulfide	mg/kg	0.0029 U	0.0027 U		40	
Carbon tetrachloride	mg/kg	0.0029 U	0.0027 U		40	
Chlorobenzene	mg/kg	0.0029 U	0.0027 U		40	
Chloroethane	mg/kg	0.0041 U	0.0039 U		40	
Chloroform	mg/kg	0.0034 U	0.0032 U		40	
Chloromethane	mg/kg	0.0032 U	0.0031 U		40	
cis-1,2-Dichloroethene	mg/kg	0.0029 U	0.0027 U		40	
cis-1,3-Dichloropropene	mg/kg	0.0029 U	0.0027 U		40	
Dibromochloromethane	mg/kg	0.0029 U	0.0027 U		40	
Dibromomethane	mg/kg	0.0029 U	0.0027 U		40	
Ethylbenzene	mg/kg	0.0033 U	0.0031 U		40	
Iodomethane	mg/kg	0.0029 U	0.0027 U		40	
Isopropylbenzene (Cumene)	mg/kg	0.0033 U	0.0032 U		40	
m&p-Xylene	mg/kg	0.0059 U	0.0056 U		40	
Methyl-tert-butyl ether	mg/kg	0.0029 U	0.0027 U		40	
Methylene Chloride	mg/kg	0.0029 U	0.0027 U		40	
o-Xylene	mg/kg	0.0030 U	0.0028 U		40	
Styrene	mg/kg	0.0029 U	0.0027 U		40	
Tetrachloroethene	mg/kg	0.0029 U	0.0027 U		40	
Toluene	mg/kg	0.0031 U	0.0030 U		40	
trans-1,2-Dichloroethene	mg/kg	0.0035 U	0.0033 U		40	
trans-1,3-Dichloropropene	mg/kg	0.0029 U	0.0027 U		40	
trans-1,4-Dichloro-2-butene	mg/kg	0.0029 U	0.0027 U		40	

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(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

SAMPLE DUPLICATE: 2017386

Parameter	Units	35315822003 Result	Dup Result	RPD	Max RPD	Qualifiers
Trichloroethene	mg/kg	0.0032 U	0.0031 U		40	
Trichlorofluoromethane	mg/kg	0.0031 U	0.0030 U		40	
Vinyl acetate	mg/kg	0.0029 U	0.0028 U		40	
Vinyl chloride	mg/kg	0.0031 U	0.0029 U		40	
Xylene (Total)	mg/kg	0.0059 U	0.0056 U		40	
1,2-Dichloroethane-d4 (S)	%	97	97	5	40	
4-Bromofluorobenzene (S)	%	98	97	5	40	
Toluene-d8 (S)	%	103	103	5	40	

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QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

QC Batch: 372882
QC Batch Method: EPA 3546
Analysis Method: EPA 8081
Analysis Description: 8081 GCS Pesticides
Associated Lab Samples: 35316070001

METHOD BLANK: 2015546
Matrix: Solid
Associated Lab Samples: 35316070001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
4,4'-DDD	mg/kg	0.00013 U	0.0017	0.00013	06/06/17 11:39	
4,4'-DDE	mg/kg	0.000061 U	0.0017	0.000061	06/06/17 11:39	
4,4'-DDT	mg/kg	0.000096 U	0.0017	0.000096	06/06/17 11:39	
Aldrin	mg/kg	0.000058 U	0.0017	0.000058	06/06/17 11:39	
alpha-BHC	mg/kg	0.000069 U	0.0017	0.000069	06/06/17 11:39	
beta-BHC	mg/kg	0.000077 U	0.0017	0.000077	06/06/17 11:39	
Chlordane (Technical)	mg/kg	0.016 U	0.017	0.016	06/06/17 11:39	
delta-BHC	mg/kg	0.000087 U	0.0017	0.000087	06/06/17 11:39	
Dieldrin	mg/kg	0.000040 U	0.0017	0.000040	06/06/17 11:39	
Endosulfan I	mg/kg	0.000025 U	0.0017	0.000025	06/06/17 11:39	
Endosulfan II	mg/kg	0.000057 U	0.0017	0.000057	06/06/17 11:39	
Endosulfan sulfate	mg/kg	0.000043 U	0.0017	0.000043	06/06/17 11:39	
Endrin	mg/kg	0.000052 U	0.0017	0.000052	06/06/17 11:39	
Endrin aldehyde	mg/kg	0.000066 U	0.0033	0.000066	06/06/17 11:39	
Endrin ketone	mg/kg	0.000080 U	0.0017	0.000080	06/06/17 11:39	
gamma-BHC (Lindane)	mg/kg	0.00015 U	0.0017	0.00015	06/06/17 11:39	
Heptachlor	mg/kg	0.000039 U	0.0017	0.000039	06/06/17 11:39	
Heptachlor epoxide	mg/kg	0.00011 U	0.0017	0.00011	06/06/17 11:39	
Methoxychlor	mg/kg	0.0010 U	0.0017	0.0010	06/06/17 11:39	
Toxaphene	mg/kg	0.0073 U	0.017	0.0073	06/06/17 11:39	
Decachlorobiphenyl (S)	%	97	43-157		06/06/17 11:39	
Tetrachloro-m-xylene (S)	%	101	53-140		06/06/17 11:39	

LABORATORY CONTROL SAMPLE: 2015547

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4,4'-DDD	mg/kg	.017	0.015	87	71-137	
4,4'-DDE	mg/kg	.017	0.014	82	71-136	
4,4'-DDT	mg/kg	.017	0.013	76	62-140	
Aldrin	mg/kg	.017	0.012	74	67-128	
alpha-BHC	mg/kg	.017	0.015	87	68-130	
beta-BHC	mg/kg	.017	0.016	94	70-130	
delta-BHC	mg/kg	.017	0.014	84	45-123	
Dieldrin	mg/kg	.017	0.014	86	72-132	
Endosulfan I	mg/kg	.017	0.015	88	72-130	
Endosulfan II	mg/kg	.017	0.015	88	72-132	
Endosulfan sulfate	mg/kg	.017	0.014	86	68-130	
Endrin	mg/kg	.017	0.014	85	70-135	
Endrin aldehyde	mg/kg	.017	0.014	82	59-131	
Endrin ketone	mg/kg	.017	0.015	92	69-135	

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QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

LABORATORY CONTROL SAMPLE: 2015547

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
gamma-BHC (Lindane)	mg/kg	.017	0.015	88	69-132	
Heptachlor	mg/kg	.017	0.013	77	68-131	
Heptachlor epoxide	mg/kg	.017	0.015	93	69-130	
Methoxychlor	mg/kg	.017	0.014	81	64-139	
Decachlorobiphenyl (S)	%			65	43-157	
Tetrachloro-m-xylene (S)	%			76	53-140	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2015636 2015637

Parameter	Units	35315544006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4,4'-DDD	mg/kg	0.00060 I	.033	.033	0.031	0.031	91	92	71-137	0	40	
4,4'-DDE	mg/kg	0.017	.033	.033	0.050	0.055	101	115	71-136	8	40	
4,4'-DDT	mg/kg	0.0052	.033	.033	0.033	0.032	83	83	62-140	1	40	
Aldrin	mg/kg	0.00073 I	.033	.033	0.031	0.031	91	92	67-128	0	40	
alpha-BHC	mg/kg	0.00014 U	.033	.033	0.032	0.031	95	94	68-130	2	40	
beta-BHC	mg/kg	0.00015 U	.033	.033	0.031	0.030	94	93	70-130	2	40	
delta-BHC	mg/kg	0.00017 U	.033	.033	0.042	0.037	125	113	45-123	11	40	J(M1)
Dieldrin	mg/kg	0.014	.033	.033	0.045	0.047	94	101	72-132	4	40	
Endosulfan I	mg/kg	0.000049 U	.033	.033	0.030	0.030	91	91	72-130	1	40	
Endosulfan II	mg/kg	0.00011 U	.033	.033	0.041	0.037	123	114	72-132	9	40	
Endosulfan sulfate	mg/kg	0.000085 U	.033	.033	0.029	0.029	86	88	68-130	1	40	
Endrin	mg/kg	0.00010 U	.033	.033	0.029	0.029	86	87	70-135	0	40	
Endrin aldehyde	mg/kg	0.00013 U	.033	.033	0.027	0.027	81	82	59-131	0	40	
Endrin ketone	mg/kg	0.00016 U	.033	.033	0.030	0.031	91	95	69-135	3	40	
gamma-BHC (Lindane)	mg/kg	0.00029 U	.033	.033	0.031	0.030	94	92	69-132	3	40	
Heptachlor	mg/kg	0.000077 U	.033	.033	0.031	0.031	92	94	68-131	1	40	
Heptachlor epoxide	mg/kg	0.00022 U	.033	.033	0.032	0.032	96	97	69-130	1	40	
Methoxychlor	mg/kg	0.0021 U	.033	.033	0.033	0.028	99	84	64-139	17	40	
Decachlorobiphenyl (S)	%						98	96	43-157			
Tetrachloro-m-xylene (S)	%						97	100	53-140			

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QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

QC Batch: 374713 Analysis Method: EPA 8082
QC Batch Method: EPA 3546 Analysis Description: 8082 GCS PCB
Associated Lab Samples: 35316070001

METHOD BLANK: 2027284 Matrix: Solid
Associated Lab Samples: 35316070001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	mg/kg	0.010 U	0.017	0.010	06/14/17 14:10	
PCB-1221 (Aroclor 1221)	mg/kg	0.0081 U	0.017	0.0081	06/14/17 14:10	
PCB-1232 (Aroclor 1232)	mg/kg	0.0085 U	0.017	0.0085	06/14/17 14:10	
PCB-1242 (Aroclor 1242)	mg/kg	0.0093 U	0.017	0.0093	06/14/17 14:10	
PCB-1248 (Aroclor 1248)	mg/kg	0.011 U	0.017	0.011	06/14/17 14:10	
PCB-1254 (Aroclor 1254)	mg/kg	0.0069 U	0.017	0.0069	06/14/17 14:10	
PCB-1260 (Aroclor 1260)	mg/kg	0.010 U	0.017	0.010	06/14/17 14:10	
Decachlorobiphenyl (S)	%	101	26-172		06/14/17 14:10	
Tetrachloro-m-xylene (S)	%	101	59-129		06/14/17 14:10	

LABORATORY CONTROL SAMPLE: 2027285

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	mg/kg	.084	0.073	88	50-141	
PCB-1260 (Aroclor 1260)	mg/kg	.084	0.067	81	54-145	
Decachlorobiphenyl (S)	%			78	26-172	
Tetrachloro-m-xylene (S)	%			85	59-129	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2027351 2027352

Parameter	Units	35317553001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
PCB-1016 (Aroclor 1016)	mg/kg	0.037 U	.3	.31	0.31	0.30	102	98	50-141	4	40	
PCB-1260 (Aroclor 1260)	mg/kg	0.038 U	.3	.31	0.28	0.27	90	88	54-145	3	40	
Decachlorobiphenyl (S)	%						73	88	26-172			
Tetrachloro-m-xylene (S)	%						97	94	59-129			

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(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

QC Batch: 373215
QC Batch Method: EPA 3546
Analysis Method: EPA 8270
Analysis Description: 8270 Solid MSSV Microwave
Associated Lab Samples: 35316070001

METHOD BLANK: 2017486
Matrix: Solid
Associated Lab Samples: 35316070001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	mg/kg	0.028 U	0.17	0.028	06/08/17 10:44	
1,2-Dichlorobenzene	mg/kg	0.025 U	0.17	0.025	06/08/17 10:44	
1,2-Diphenylhydrazine	mg/kg	0.018 U	0.17	0.018	06/08/17 10:44	
1,3-Dichlorobenzene	mg/kg	0.024 U	0.17	0.024	06/08/17 10:44	
1,4-Dichlorobenzene	mg/kg	0.024 U	0.17	0.024	06/08/17 10:44	
1-Methylnaphthalene	mg/kg	0.012 U	0.033	0.012	06/08/17 10:44	
2,4,5-Trichlorophenol	mg/kg	0.023 U	0.17	0.023	06/08/17 10:44	
2,4,6-Trichlorophenol	mg/kg	0.025 U	0.17	0.025	06/08/17 10:44	
2,4-Dichlorophenol	mg/kg	0.023 U	0.17	0.023	06/08/17 10:44	
2,4-Dimethylphenol	mg/kg	0.031 U	0.17	0.031	06/08/17 10:44	
2,4-Dinitrophenol	mg/kg	0.049 U	0.67	0.049	06/08/17 10:44	
2,4-Dinitrotoluene	mg/kg	0.020 U	0.17	0.020	06/08/17 10:44	
2,6-Dinitrotoluene	mg/kg	0.017 U	0.17	0.017	06/08/17 10:44	
2-Chloronaphthalene	mg/kg	0.030 U	0.17	0.030	06/08/17 10:44	
2-Chlorophenol	mg/kg	0.025 U	0.17	0.025	06/08/17 10:44	
2-Methylnaphthalene	mg/kg	0.013 U	0.033	0.013	06/08/17 10:44	
2-Methylphenol(o-Cresol)	mg/kg	0.025 U	0.17	0.025	06/08/17 10:44	
2-Nitroaniline	mg/kg	0.044 U	0.17	0.044	06/08/17 10:44	
2-Nitrophenol	mg/kg	0.027 U	0.17	0.027	06/08/17 10:44	
3&4-Methylphenol(m&p Cresol)	mg/kg	0.051 U	0.17	0.051	06/08/17 10:44	
3,3'-Dichlorobenzidine	mg/kg	0.018 U	0.67	0.018	06/08/17 10:44	
3-Nitroaniline	mg/kg	0.018 U	0.17	0.018	06/08/17 10:44	
4,6-Dinitro-2-methylphenol	mg/kg	0.019 U	0.67	0.019	06/08/17 10:44	
4-Bromophenylphenyl ether	mg/kg	0.019 U	0.17	0.019	06/08/17 10:44	
4-Chloro-3-methylphenol	mg/kg	0.021 U	0.67	0.021	06/08/17 10:44	
4-Chloroaniline	mg/kg	0.028 U	0.17	0.028	06/08/17 10:44	
4-Chlorophenylphenyl ether	mg/kg	0.021 U	0.17	0.021	06/08/17 10:44	
4-Nitroaniline	mg/kg	0.029 U	0.17	0.029	06/08/17 10:44	
4-Nitrophenol	mg/kg	0.025 U	0.17	0.025	06/08/17 10:44	
Acenaphthene	mg/kg	0.012 U	0.033	0.012	06/08/17 10:44	
Acenaphthylene	mg/kg	0.010 U	0.033	0.010	06/08/17 10:44	
Aniline	mg/kg	0.030 U	0.17	0.030	06/08/17 10:44	
Anthracene	mg/kg	0.010 U	0.033	0.010	06/08/17 10:44	
Benzo(a)anthracene	mg/kg	0.0096 U	0.033	0.0096	06/08/17 10:44	
Benzo(a)pyrene	mg/kg	0.0039 U	0.033	0.0039	06/08/17 10:44	
Benzo(b)fluoranthene	mg/kg	0.025 U	0.033	0.025	06/08/17 10:44	
Benzo(g,h,i)perylene	mg/kg	0.012 U	0.033	0.012	06/08/17 10:44	
Benzo(k)fluoranthene	mg/kg	0.0071 U	0.033	0.0071	06/08/17 10:44	
Benzyl alcohol	mg/kg	0.030 U	0.17	0.030	06/08/17 10:44	
bis(2-Chloroethoxy)methane	mg/kg	0.027 U	0.17	0.027	06/08/17 10:44	
bis(2-Chloroethyl) ether	mg/kg	0.026 U	0.17	0.026	06/08/17 10:44	

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QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

METHOD BLANK: 2017486 Matrix: Solid
Associated Lab Samples: 35316070001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
bis(2-Chloroisopropyl) ether	mg/kg	0.027 U	0.17	0.027	06/08/17 10:44	
bis(2-Ethylhexyl)phthalate	mg/kg	0.025 U	0.17	0.025	06/08/17 10:44	
Butylbenzylphthalate	mg/kg	0.019 U	0.17	0.019	06/08/17 10:44	
Chrysene	mg/kg	0.012 U	0.033	0.012	06/08/17 10:44	
Di-n-butylphthalate	mg/kg	0.022 U	0.17	0.022	06/08/17 10:44	
Di-n-octylphthalate	mg/kg	0.017 U	0.17	0.017	06/08/17 10:44	
Dibenz(a,h)anthracene	mg/kg	0.017 U	0.033	0.017	06/08/17 10:44	
Dibenzofuran	mg/kg	0.023 U	0.17	0.023	06/08/17 10:44	
Diethylphthalate	mg/kg	0.023 U	0.17	0.023	06/08/17 10:44	
Dimethylphthalate	mg/kg	0.018 U	0.17	0.018	06/08/17 10:44	
Fluoranthene	mg/kg	0.011 U	0.033	0.011	06/08/17 10:44	
Fluorene	mg/kg	0.015 U	0.033	0.015	06/08/17 10:44	
Hexachloro-1,3-butadiene	mg/kg	0.024 U	0.17	0.024	06/08/17 10:44	
Hexachlorobenzene	mg/kg	0.019 U	0.17	0.019	06/08/17 10:44	
Hexachlorocyclopentadiene	mg/kg	0.041 U	0.67	0.041	06/08/17 10:44	
Hexachloroethane	mg/kg	0.031 U	0.17	0.031	06/08/17 10:44	
Indeno(1,2,3-cd)pyrene	mg/kg	0.017 U	0.033	0.017	06/08/17 10:44	
Isophorone	mg/kg	0.025 U	0.17	0.025	06/08/17 10:44	
N-Nitroso-di-n-propylamine	mg/kg	0.024 U	0.17	0.024	06/08/17 10:44	
N-Nitrosodimethylamine	mg/kg	0.025 U	0.17	0.025	06/08/17 10:44	
N-Nitrosodiphenylamine	mg/kg	0.021 U	0.17	0.021	06/08/17 10:44	
Naphthalene	mg/kg	0.011 U	0.033	0.011	06/08/17 10:44	
Nitrobenzene	mg/kg	0.027 U	0.17	0.027	06/08/17 10:44	
Pentachlorophenol	mg/kg	0.021 U	0.67	0.021	06/08/17 10:44	
Phenanthrene	mg/kg	0.012 U	0.033	0.012	06/08/17 10:44	
Phenol	mg/kg	0.031 U	0.17	0.031	06/08/17 10:44	
Pyrene	mg/kg	0.017 U	0.033	0.017	06/08/17 10:44	
2,4,6-Tribromophenol (S)	%	91	10-175		06/08/17 10:44	
2-Fluorobiphenyl (S)	%	96	32-129		06/08/17 10:44	
2-Fluorophenol (S)	%	88	10-113		06/08/17 10:44	
Nitrobenzene-d5 (S)	%	86	16-123		06/08/17 10:44	
Phenol-d6 (S)	%	88	10-117		06/08/17 10:44	
Terphenyl-d14 (S)	%	94	38-138		06/08/17 10:44	

LABORATORY CONTROL SAMPLE: 2017487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	mg/kg	1.7	1.6	94	51-110	
1,2-Dichlorobenzene	mg/kg	1.7	1.4	84	51-110	
1,2-Diphenylhydrazine	mg/kg	1.7	1.7	102	61-111	
1,3-Dichlorobenzene	mg/kg	1.7	1.4	82	50-110	
1,4-Dichlorobenzene	mg/kg	1.7	1.4	84	51-110	
1-Methylnaphthalene	mg/kg	1.7	1.6	95	27-123	
2,4,5-Trichlorophenol	mg/kg	1.7	1.8	106	55-114	

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(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

LABORATORY CONTROL SAMPLE: 2017487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	mg/kg	1.7	1.7	100	58-110	
2,4-Dichlorophenol	mg/kg	1.7	1.7	104	57-110	
2,4-Dimethylphenol	mg/kg	1.7	1.7	104	59-110	
2,4-Dinitrophenol	mg/kg	1.7	2.1	125	39-113	J(L1)
2,4-Dinitrotoluene	mg/kg	1.7	1.8	109	68-110	
2,6-Dinitrotoluene	mg/kg	1.7	1.7	100	66-110	
2-Chloronaphthalene	mg/kg	1.7	1.5	89	59-110	
2-Chlorophenol	mg/kg	1.7	1.4	86	51-110	
2-Methylnaphthalene	mg/kg	1.7	1.6	94	16-137	
2-Methylphenol(o-Cresol)	mg/kg	1.7	1.5	93	56-110	
2-Nitroaniline	mg/kg	1.7	1.8	106	59-110	
2-Nitrophenol	mg/kg	1.7	1.8	109	56-110	
3&4-Methylphenol(m&p Cresol)	mg/kg	1.7	1.5	91	55-110	
3,3'-Dichlorobenzidine	mg/kg	1.7	1.6	95	66-110	
3-Nitroaniline	mg/kg	1.7	1.5	89	59-117	
4,6-Dinitro-2-methylphenol	mg/kg	1.7	2.0	120	55-113	J(L1)
4-Bromophenylphenyl ether	mg/kg	1.7	1.6	94	65-110	
4-Chloro-3-methylphenol	mg/kg	1.7	1.7	101	64-110	
4-Chloroaniline	mg/kg	1.7	1.6	96	56-110	
4-Chlorophenylphenyl ether	mg/kg	1.7	1.6	98	58-111	
4-Nitroaniline	mg/kg	1.7	1.5	90	70-110	
4-Nitrophenol	mg/kg	1.7	1.3	80	49-136	
Acenaphthene	mg/kg	1.7	1.6	95	37-120	
Acenaphthylene	mg/kg	1.7	1.4	85	41-120	
Aniline	mg/kg	1.7	1.4	82	50-150	
Anthracene	mg/kg	1.7	1.4	83	45-120	
Benzo(a)anthracene	mg/kg	1.7	1.5	88	44-120	
Benzo(a)pyrene	mg/kg	1.7	1.8	106	44-123	
Benzo(b)fluoranthene	mg/kg	1.7	1.7	104	37-124	
Benzo(g,h,i)perylene	mg/kg	1.7	1.8	109	42-125	
Benzo(k)fluoranthene	mg/kg	1.7	1.8	110	44-126	
Benzyl alcohol	mg/kg	1.7	1.6	95	50-150	
bis(2-Chloroethoxy)methane	mg/kg	1.7	1.6	98	53-110	
bis(2-Chloroethyl) ether	mg/kg	1.7	1.5	89	45-110	
bis(2-Chloroisopropyl) ether	mg/kg	1.7	1.4	85	51-110	
bis(2-Ethylhexyl)phthalate	mg/kg	1.7	1.6	99	71-110	
Butylbenzylphthalate	mg/kg	1.7	1.7	101	72-110	
Chrysene	mg/kg	1.7	1.3	78	45-120	
Di-n-butylphthalate	mg/kg	1.7	1.3	75	67-115	
Di-n-octylphthalate	mg/kg	1.7	1.5	90	71-110	
Dibenz(a,h)anthracene	mg/kg	1.7	1.8	106	43-124	
Dibenzofuran	mg/kg	1.7	1.4	84	63-110	
Diethylphthalate	mg/kg	1.7	1.6	94	65-112	
Dimethylphthalate	mg/kg	1.7	1.6	95	63-111	
Fluoranthene	mg/kg	1.7	1.2	71	45-120	
Fluorene	mg/kg	1.7	1.5	91	42-120	
Hexachloro-1,3-butadiene	mg/kg	1.7	1.6	99	51-110	

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(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

LABORATORY CONTROL SAMPLE: 2017487

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hexachlorobenzene	mg/kg	1.7	1.8	108	65-110	
Hexachlorocyclopentadiene	mg/kg	1.7	0.049 I	3	18-112	J(L2)
Hexachloroethane	mg/kg	1.7	1.4	86	49-110	
Indeno(1,2,3-cd)pyrene	mg/kg	1.7	1.8	105	43-123	
Isophorone	mg/kg	1.7	1.7	100	52-110	
N-Nitroso-di-n-propylamine	mg/kg	1.7	1.4	85	46-110	
N-Nitrosodimethylamine	mg/kg	1.7	1.4	83	42-110	
N-Nitrosodiphenylamine	mg/kg	1.7	1.7	103	66-110	
Naphthalene	mg/kg	1.7	1.3	81	40-120	
Nitrobenzene	mg/kg	1.7	1.7	99	49-110	
Pentachlorophenol	mg/kg	1.7	2.0	118	49-117	J(L1)
Phenanthrene	mg/kg	1.7	1.3	78	36-125	
Phenol	mg/kg	1.7	1.5	88	52-110	
Pyrene	mg/kg	1.7	1.2	75	41-123	
2,4,6-Tribromophenol (S)	%			100	10-175	
2-Fluorobiphenyl (S)	%			91	32-129	
2-Fluorophenol (S)	%			81	10-113	
Nitrobenzene-d5 (S)	%			94	16-123	
Phenol-d6 (S)	%			87	10-117	
Terphenyl-d14 (S)	%			82	38-138	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2018392 2018393

Parameter	Units	35316070001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	mg/kg	0.029 U	1.8	1.8	1.4	1.3	81	78	51-110	3	40	
1,2-Dichlorobenzene	mg/kg	0.026 U	1.8	1.8	1.3	1.3	78	73	51-110	6	40	
1,2-Diphenylhydrazine	mg/kg	0.018 U	1.8	1.8	1.6	1.7	90	99	61-111	9	40	
1,3-Dichlorobenzene	mg/kg	0.024 U	1.8	1.8	1.3	1.2	77	72	50-110	6	40	
1,4-Dichlorobenzene	mg/kg	0.025 U	1.8	1.8	1.3	1.3	77	73	51-110	5	40	
1-Methylnaphthalene	mg/kg	0.012 U	1.8	1.8	1.4	1.4	83	82	27-123	0	40	
2,4,5-Trichlorophenol	mg/kg	0.023 U	1.8	1.8	1.6	1.6	96	92	55-114	3	40	
2,4,6-Trichlorophenol	mg/kg	0.026 U	1.8	1.8	1.6	1.6	91	92	58-110	2	40	
2,4-Dichlorophenol	mg/kg	0.024 U	1.8	1.8	1.5	1.5	88	86	57-110	2	40	
2,4-Dimethylphenol	mg/kg	0.031 U	1.8	1.8	1.5	1.5	88	85	59-110	3	40	
2,4-Dinitrophenol	mg/kg	0.050 U	1.8	1.8	2.1	2.0	121	117	39-113	3	40	J(M0)
2,4-Dinitrotoluene	mg/kg	0.021 U	1.8	1.8	1.8	1.6	102	94	68-110	8	40	
2,6-Dinitrotoluene	mg/kg	0.017 U	1.8	1.8	1.6	1.5	94	88	66-110	7	40	
2-Chloronaphthalene	mg/kg	0.031 U	1.8	1.8	1.5	1.4	87	84	59-110	4	40	
2-Chlorophenol	mg/kg	0.026 U	1.8	1.8	1.4	1.3	80	75	51-110	5	40	
2-Methylnaphthalene	mg/kg	0.014 U	1.8	1.8	1.4	1.4	84	81	16-137	4	40	
2-Methylphenol(o-Cresol)	mg/kg	0.025 U	1.8	1.8	1.4	1.3	83	77	56-110	8	40	
2-Nitroaniline	mg/kg	0.045 U	1.8	1.8	1.7	1.6	97	95	59-110	3	40	
2-Nitrophenol	mg/kg	0.028 U	1.8	1.8	1.5	1.5	90	88	56-110	2	40	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2018392 2018393

Parameter	Units	35316070001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
3&4-Methylphenol(m&p Cresol)	mg/kg	0.052 U	1.8	1.8	1.5	1.4	88	80	55-110	9	40	
3,3'-Dichlorobenzidine	mg/kg	0.018 U	1.8	1.8	1.6	1.5	91	90	66-110	1	40	
3-Nitroaniline	mg/kg	0.019 U	1.8	1.8	1.4	1.4	82	81	59-117	1	40	
4,6-Dinitro-2-methylphenol	mg/kg	0.019 U	1.8	1.8	1.9	1.8	111	108	55-113	3	40	
4-Bromophenylphenyl ether	mg/kg	0.020 U	1.8	1.8	1.7	1.4	101	83	65-110	19	40	
4-Chloro-3-methylphenol	mg/kg	0.021 U	1.8	1.8	1.5	1.5	88	86	64-110	2	40	
4-Chloroaniline	mg/kg	0.028 U	1.8	1.8	1.4	1.4	81	79	56-110	2	40	
4-Chlorophenylphenyl ether	mg/kg	0.022 U	1.8	1.8	1.6	1.5	94	89	58-111	6	40	
4-Nitroaniline	mg/kg	0.030 U	1.8	1.8	1.5	1.4	86	82	70-110	5	40	
4-Nitrophenol	mg/kg	0.026 U	1.8	1.8	1.4	1.3	80	76	49-136	5	40	
Acenaphthene	mg/kg	0.012 U	1.8	1.8	1.6	1.5	92	90	37-120	2	40	
Acenaphthylene	mg/kg	0.011 U	1.8	1.8	1.5	1.5	89	85	41-120	4	40	
Aniline	mg/kg	0.031 U	1.8	1.8	0.99	0.90	58	52	50-150	10	40	
Anthracene	mg/kg	0.010 U	1.8	1.8	1.6	1.6	95	92	45-120	4	40	
Benzo(a)anthracene	mg/kg	0.0098 U	1.8	1.8	1.5	1.5	89	86	44-120	3	40	
Benzo(a)pyrene	mg/kg	0.0040 U	1.8	1.8	1.7	1.6	99	95	44-123	4	40	
Benzo(b)fluoranthene	mg/kg	0.025 U	1.8	1.8	1.6	1.6	94	96	37-124	1	40	
Benzo(g,h,i)perylene	mg/kg	0.012 U	1.8	1.8	1.6	1.6	95	93	42-125	1	40	
Benzo(k)fluoranthene	mg/kg	0.0073 U	1.8	1.8	1.8	1.6	103	95	44-126	8	40	
Benzyl alcohol	mg/kg	0.031 U	1.8	1.8	1.5	1.4	87	79	50-150	9	40	
bis(2-Chloroethoxy)methane	mg/kg	0.028 U	1.8	1.8	1.5	1.4	86	83	53-110	4	40	
bis(2-Chloroethyl) ether	mg/kg	0.027 U	1.8	1.8	1.4	1.3	84	75	45-110	11	40	
bis(2-Chloroisopropyl) ether	mg/kg	0.027 U	1.8	1.8	1.5	1.3	87	75	51-110	14	40	
bis(2-Ethylhexyl)phthalate	mg/kg	0.025 U	1.8	1.8	1.7	1.6	100	94	71-110	6	40	
Butylbenzylphthalate	mg/kg	0.020 U	1.8	1.8	1.7	1.6	97	91	72-110	6	40	
Chrysene	mg/kg	0.012 U	1.8	1.8	1.5	1.4	90	84	45-120	6	40	
Di-n-butylphthalate	mg/kg	0.022 U	1.8	1.8	1.7	1.5	98	87	67-115	13	40	
Di-n-octylphthalate	mg/kg	0.018 U	1.8	1.8	1.8	1.7	104	98	71-110	6	40	
Dibenz(a,h)anthracene	mg/kg	0.017 U	1.8	1.8	1.6	1.6	95	95	43-124	0	40	
Dibenzofuran	mg/kg	0.024 U	1.8	1.8	1.5	1.5	90	86	63-110	4	40	
Diethylphthalate	mg/kg	0.024 U	1.8	1.8	1.6	1.5	93	88	65-112	6	40	
Dimethylphthalate	mg/kg	0.018 U	1.8	1.8	1.6	1.5	91	87	63-111	4	40	
Fluoranthene	mg/kg	0.011 U	1.8	1.8	1.6	1.5	93	87	45-120	7	40	
Fluorene	mg/kg	0.015 U	1.8	1.8	1.6	1.5	93	90	42-120	3	40	
Hexachloro-1,3-butadiene	mg/kg	0.025 U	1.8	1.8	1.4	1.4	83	81	51-110	2	40	
Hexachlorobenzene	mg/kg	0.020 U	1.8	1.8	1.7	1.7	98	100	65-110	2	40	
Hexachlorocyclopentadiene	mg/kg	0.042 U	1.8	1.8	0.045 I	0.044 I	3	3	18-112		40	J(M0)
Hexachloroethane	mg/kg	0.032 U	1.8	1.8	1.4	1.3	79	75	49-110	5	40	
Indeno(1,2,3-cd)pyrene	mg/kg	0.017 U	1.8	1.8	1.6	1.6	95	94	43-123	0	40	
Isophorone	mg/kg	0.026 U	1.8	1.8	1.5	1.4	88	84	52-110	5	40	
N-Nitroso-di-n-propylamine	mg/kg	0.025 U	1.8	1.8	1.5	1.3	87	78	46-110	12	40	
N-Nitrosodimethylamine	mg/kg	0.026 U	1.8	1.8	1.2	1.2	73	70	42-110	4	40	
N-Nitrosodiphenylamine	mg/kg	0.021 U	1.8	1.8	1.7	1.7	96	97	66-110	1	40	
Naphthalene	mg/kg	0.011 U	1.8	1.8	1.4	1.3	80	76	40-120	5	40	
Nitrobenzene	mg/kg	0.027 U	1.8	1.8	1.4	1.4	83	80	49-110	4	40	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2018392 2018393

Parameter	Units	35316070001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Pentachlorophenol	mg/kg	0.022 U	1.8	1.8	1.8	1.9	108	108	49-117	1	40	
Phenanthrene	mg/kg	0.013 U	1.8	1.8	1.6	1.5	93	89	36-125	4	40	
Phenol	mg/kg	0.032 U	1.8	1.8	1.4	1.3	79	73	52-110	8	40	
Pyrene	mg/kg	0.017 U	1.8	1.8	1.6	1.4	95	84	41-123	11	40	
2,4,6-Tribromophenol (S)	%						97	89	10-175			
2-Fluorobiphenyl (S)	%						87	84	32-129			
2-Fluorophenol (S)	%						73	69	10-113			
Nitrobenzene-d5 (S)	%						78	76	16-123			
Phenol-d6 (S)	%						78	73	10-117			
Terphenyl-d14 (S)	%						87	79	38-138			

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

QC Batch: 373209
QC Batch Method: EPA 3546
Analysis Method: FL-PRO
Analysis Description: FL-PRO Soil
Associated Lab Samples: 35316070001

METHOD BLANK: 2017435
Matrix: Solid
Associated Lab Samples: 35316070001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Petroleum Range Organics	mg/kg	2.5 U	4.0	2.5	06/08/17 16:08	
N-Pentatriacontane (S)	%	60	42-159		06/08/17 16:08	
o-Terphenyl (S)	%	78	62-109		06/08/17 16:08	

LABORATORY CONTROL SAMPLE: 2017436

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Petroleum Range Organics	mg/kg	200	130	65	63-153	
N-Pentatriacontane (S)	%			35	42-159	J(S0)
o-Terphenyl (S)	%			74	62-109	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2018227 2018228

Parameter	Units	35316133005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Petroleum Range Organics	mg/kg	2.6 U	201	201	131	154	65	76	51-215	16	25	
N-Pentatriacontane (S)	%						28	92	42-159			J(S0)
o-Terphenyl (S)	%						86	78	62-109			

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(386)672-5668

QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

QC Batch: 373256
QC Batch Method: ASTM D2974-87
Associated Lab Samples: 35316070001

Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture

SAMPLE DUPLICATE: 2018052

Parameter	Units	35315544005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.0	33.3	60	10	J(D6)

SAMPLE DUPLICATE: 2018120

Parameter	Units	35315526003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	0.77	0.47	48	10	J(D6)

SAMPLE DUPLICATE: 2018121

Parameter	Units	35315526012 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	0.34	0.35	3	10	

SAMPLE DUPLICATE: 2018122

Parameter	Units	35316162003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	11.5	12.5	8	10	

SAMPLE DUPLICATE: 2018123

Parameter	Units	35315723028 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	2.8	1.5	60	10	J(D6)

SAMPLE DUPLICATE: 2018124

Parameter	Units	35316113002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	1.3	1.2	9	10	

SAMPLE DUPLICATE: 2018125

Parameter	Units	35316113011 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	7.4	6.8	8	10	

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QUALITY CONTROL DATA

Project: FECC Backfill
Pace Project No.: 35316070

SAMPLE DUPLICATE: 2018126

Parameter	Units	35316113020 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	7.9	9.5	18	10	J(D6)

SAMPLE DUPLICATE: 2018127

Parameter	Units	35316127005 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	6.7	10.9	48	10	J(D6)

SAMPLE DUPLICATE: 2018128

Parameter	Units	35316144009 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	27.6	26.9	3	10	

SAMPLE DUPLICATE: 2018129

Parameter	Units	35316044003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	2.5	1.6	42	10	J(D6)

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALIFIERS

Project: FECC Backfill
Pace Project No.: 35316070

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-O	Pace Analytical Services - Ormond Beach

ANALYTE QUALIFIERS

I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
U	Compound was analyzed for but not detected.
J(D6)	Estimated Value. The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.
J(L1)	Estimated Value. Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
J(L2)	Estimated Value. Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
J(M0)	Estimated Value. Matrix spike recovery was outside laboratory control limits.
J(M1)	Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
J(S0)	Estimated Value. Surrogate recovery outside laboratory control limits.

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8 East Tower Circle
Ormond Beach, FL 32174
(386)672-5668

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FECC Backfill
Pace Project No.: 35316070

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35316070001	**Backfill-1**	EPA 3546	372882	EPA 8081	373020
35316070001	**Backfill-1**	EPA 3546	374713	EPA 8082	374873
35316070001	**Backfill-1**	EPA 3546	373209	FL-PRO	373559
35316070001	**Backfill-1**	EPA 3050	374187	EPA 6010	374207
35316070001	**Backfill-1**	EPA 7471	374223	EPA 7471	374274
35316070001	**Backfill-1**	EPA 3546	373215	EPA 8270	373573
35316070001	**Backfill-1**	EPA 8260	373102		
35316070001	**Backfill-1**	ASTM D2974-87	373256		

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WO# : 35316070

35316070

Pace Analytical

HAIN-OF-CUSTODY / Analytical Request Document

e Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A
Required Client Information:

Company: FECC Inc.	
Address: 3652 Old Winter Garden Rd Orlando FL 32805	
Email To: dschill@feccorporation.com	
Phone: 407-296-9995 Fax:	
Requested Due Date:	

Required Project Information:

Report To: Don Schill	
Copy To: Victor San Agustin	
Purchase Order #:	
Project Name: FECC Backfill	
Project #:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	
Pace Profile #:	

Regulatory Agency

State / Location

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Y/N	Analyses Test	Residual Chlorine (Y/N)
1	Backfill 1	SL	C	6/6/17	10:30	6/6/17	10:47		4							X			X Volatiles, X semi Volatiles, X Base/Neutral Extract, X Acid Extract, X 8 RCRA Metals, X Pesticides, Y FL-PRO	
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Don Schill/FECC	6/6/17	12:25	Nicole Nunella	6/6/17	1225	21.5 T206	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Don Schill

SIGNATURE of SAMPLER: Don Schill DATE Signed: 6-6-2017

Pace Analytical Florida Laboratory	Document Name: Sample Condition Upon Receipt Form	Document Revised: February 6, 2017
	Document No.: F-FL-C-007 rev. 11	Issuing Authority: Pace Florida Quality Office

WO#: 35316070

Project #
Project Manager:
Client:

PM: TSR Due Date: 06/08/17
CLIENT: FECCOR

Date and Initials of person:
Examining contents:
Label:
Deliver: NMS
pH:

Thermometer Used: T286 Date: 6/6/17 Time: 1225 Initials: NMS

Cooler #1 Temp.°C 21.4 (Visual) +0.1 (Correction Factor) 21.5 (Actual) ☐ Samples on ice, cooling process has begun
Cooler #2 Temp.°C _____ (Visual) _____ (Correction Factor) _____ (Actual) ☐ Samples on ice, cooling process has begun
Cooler #3 Temp.°C _____ (Visual) _____ (Correction Factor) _____ (Actual) ☐ Samples on ice, cooling process has begun
Cooler #4 Temp.°C _____ (Visual) _____ (Correction Factor) _____ (Actual) ☐ Samples on ice, cooling process has begun
Cooler #5 Temp.°C _____ (Visual) _____ (Correction Factor) _____ (Actual) ☐ Samples on ice, cooling process has begun
Cooler #6 Temp.°C _____ (Visual) _____ (Correction Factor) _____ (Actual) ☐ Samples on ice, cooling process has begun

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ Other _____
Shipping Method: ☐ First Overnight ☐ Priority Overnight ☐ Standard Overnight ☐ Ground ☐ Other _____
Billing: ☐ Recipient ☐ Sender ☐ Third Party ☐ Unknown

Tracking # _____

Custody Seal on Cooler/Box Present: ☐ Yes ☐ No Seals intact: ☐ Yes ☐ No Ice: (Wet) Blue None

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Samples shorted to lab (If Yes, complete) Shorted Date: _____ Shorted Time: _____ Qty: _____

		Comments:
Chain of Custody Present	☑Yes ☐ No ☐N/A	
Chain of Custody Filled Out	☑Yes ☐ No ☐N/A	
Relinquished Signature & Sampler Name COC	☑Yes ☐ No ☐N/A	
Samples Arrived within Hold Time	☑Yes ☐ No ☐N/A	
Rush TAT requested on COC	☐Yes ☐ No ☑N/A	
Sufficient Volume	☑Yes ☐ No ☐N/A	
Correct Containers Used	☑Yes ☐ No ☐N/A	
Containers Intact	☑Yes ☐ No ☐N/A	
Sample Labels match COC (sample IDs & date/time of collection)	☑Yes ☐ No ☐N/A	
All containers needing acid/base preservation have been checked.	☐Yes ☐ No ☑N/A	Preservation Information:
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G, Carbamates	☐Yes ☐ No ☑N/A	Preservative: Lot #/Trace #: Date: Time: Initials:
Headspace in VOA Vials? (>6mm):	☐Yes ☐ No ☑N/A	
Trip Blank Present:	☐Yes ☐ No ☑N/A	

Client Notification/ Resolution:
Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments): _____

Project Manager Review: _____ Date: _____

JUNE THROUGH AUGUST 2017
AIR SAMPLING

LABORATORY ANALYTICAL RESULTS

Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

June 30, 2017

Jim Langenbach
Geosyntec Consultants
6770 S Washington Ave Ste 3
Casselberry, FL 32730

RE: Workorder: G1705318 NASA KSC 39B TUNNEL

Dear Jim Langenbach:

Enclosed are the analytical results for sample(s) received by the laboratory on Friday, June 23, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

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Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

SAMPLE SUMMARY

Workorder: G1705318 NASA KSC 39B TUNNEL

Lab ID	Sample ID	Matrix	Date Collected	Date Received
G1705318001	39B-AIR0001-20170621	Air	6/21/2017 15:33	6/23/2017 10:30
G1705318002	39B-AIR0002-20170621	Air	6/21/2017 15:44	6/23/2017 10:30
G1705318003	39B-AIR0003-20170621	Air	6/21/2017 15:49	6/23/2017 10:30
G1705318004	39B-AIR0004-20170621	Air	6/21/2017 15:40	6/23/2017 10:30
G1705318005	39B-AIR0005-20170621	Air	6/21/2017 16:54	6/23/2017 10:30

CERTIFICATE OF ANALYSIS

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Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

ANALYTICAL RESULTS QUALIFIERS

Workorder: G1705318 NASA KSC 39B TUNNEL

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

CERTIFICATE OF ANALYSIS

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AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

June 29, 2017

Todd Romero
Advanced Env Labs

4965 SW 41st Blvd.
Gainesville FL 32608

RE: 39B Tunnel

Dear Todd Romero: Order No: 1706N51

Analytical Environmental Services, Inc. received 5 samples on 6/23/2017 10:30:00 AM
for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Air & Emissions for Volatile Organics effective 07/01/16-06/30/17.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Tyrel Heckendorf

Project Manager

APPENDIX

Compound	CAS #	Alternate Name	TO-14A	TO-15	SOP
Acetone	67-64-1				X
Allyl chloride	107-05-1	3-Chloropropene		X	
Benzene	71-43-2		X	X	
Benzyl chloride	100-44-7		X	X	
Bromodichloromethane	75-27-4	Dichlorobromomethane			X
Bromoform	75-25-2	Tribromomethane		X	
Bromomethane	74-83-9	Methyl bromide	X	X	
1,3-Butadiene	106-99-0			X	
Carbon disulfide	75-15-0			X	
Carbon tetrachloride	56-23-5		X	X	
Chlorobenzene	108-90-7		X	X	
Chloroethane	75-00-3	Ethyl chloride	X	X	
Chloroform	67-66-3		X	X	
Chloromethane	74-87-3	Methyl chloride	X	X	
Cyclohexane	110-82-7				X
Dibromochloromethane	124-48-1	Chlorodibromomethane			X
1,2-Dibromoethane	106-93-4	EDB/Ethylene dibromide	X	X	
1,2-Dichlorobenzene	95-50-1	*o*-Dichlorobenzene	X	X	
1,3-Dichlorobenzene	541-73-1	*m*-Dichlorobenzene	X	X	
1,4-Dichlorobenzene	106-46-7	p-Dichlorobenzene	X	X	
Dichlorodifluoromethane	75-71-8	Freon-12	X		
1,1-Dichloroethane	75-34-3		X	X	
1,2-Dichloroethane	107-06-2		X	X	
1,1-Dichloroethene	75-35-4	1,1-Dichloroethylene	X	X	
cis-1,2-Dichloroethene	156-59-2	*cis*-1,2-Dichloroethylene	X	X	
trans-1,2-Dichloroethene	156-60-5	*trans*-1,2-Dichloroethylene		X	
1,2-Dichloropropane	78-87-5		X	X	
cis-1,3-Dichloropropene	10061-01-5		X	X	
trans-1,3-Dichloropropene	10061-02-6		X	X	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	Freon-114	X		
1,4-Dioxane	123-91-1	1,4-Diethylene oxide		X	
Ethyl acetate	141-78-6	Acetic acid, ethyl ester			X
Ethylbenzene	100-41-4		X	X	
4-Ethyltoluene	622-96-8				X
n-Heptane	142-82-5	Heptane			X
Hexachlorobutadiene	87-68-3	Hexachloro-1,3-butadiene	X	X	

n-Hexane	110-54-3	Hexane		X	
Compound	**CAS #**	**Alternate Name**	**TO-14A**	**TO-15**	**SOP**
2-Hexanone	591-78-6	Methyl butyl ketone			X
Methylene chloride	75-09-2	Dichloromethane	X	X	
Methyl tert-butyl ether	1634-04-4	MTBE		X	
Methyl ethyl ketone	78-93-3	MEK/2-Butanone		X	
Methyl isobutyl ketone	108-10-1	4-Methyl-2-pentanone		X	
2-Propanol	67-63-0	Isopropanol/Isopropyl alcohol			X
Propene	115-07-1	Propylene			X
Styrene	100-42-5			X	
1,1,2,2-Tetrachloroethane	79-34-5		X	X	
Tetrachloroethene	127-18-4	Tetrachloroethylene	X	X	
Tetrahydrofuran	109-99-9				X
Toluene	108-88-3			X	
1,2,4-Trichlorobenzene	120-82-1			X	
1,1,1-Trichloroethane	74-55-6			X	
1,1,2-Trichloroethane	79-00-5			X	
Trichloroethene	79-01-6	Trichloroethylene		X	
Trichlorofluoromethane	75-69-4	Freon-11	X		
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	Freon-113	X		
1,2,4-Trimethylbenzene	95-63-6		X	X	
1,3,5-Trimethylbenzene	108-67-8		X	X	
2,2,4-Trimethylpentane	540-84-1	Isooctane		X	
Vinyl acetate	108-05-04			X	
Vinyl bromide	593-60-2	Bromoethene		X	
Vinyl chloride	75-01-4	Chloroethene	X	X	
Xylenes, Total	1330-20-7		X	X	
m/p-Xylene	179601-23-1		X	X	
o-Xylene	95-47-6		X	X	

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

VAPOR/AIR CHAIN OF CUSTODY

Work Order #: 1706N51

Page 1 of 1

Company: Geosyntec Consultants	Address: 6770 S. Washington Ave., Ste. 3, Titusville, FL, 32780	Bottle Order #:	Turnaround Time (Circle One): Standard / 2 Day Rush / 3 Day Rush / Other
Phone: 321-269-5880	Fax:		
Sampled by: Dave Sizemore / Ben Coppenger	Signature:		

#	Sample ID	Sample Start Date	Sample Start Time (24hr)	Sample Finish Date	Sample Finish Time (24 hr)	Sample Matrix*	Canister Serial #	Flow Controller ID	Canister Pressure In Field ("Hg) Start	Canister Pressure In Field ("Hg) Stop	ANALYSIS REQUESTED: TO-15	ANALYSIS REQUESTED: TCE, cDCE, VC only	Remarks
1	39B-Air0001-20170621	6/21/17	~~0814~~ 0819	6/21/17	1533	IA	23238	5055	-30				
2	39B-Air0002-20170621		~~1048~~ 1042		~~1654~~ 1659		23239	5601	-30				Sample finish time @ 1542
3	39B-Air0003-20170621		0836		1549		17452	5065	-30				
4	39B-Air0004-20170621		1025		1540		18781	5019	-30				
5	39B-Air0005-20170621		1048		1654		18901	5776	-30				
6													
7													
8													
9													
10													

SPECIAL INSTRUCTIONS/COMMENTS:
If specialized list is required, list analytes here:
RDaprato@Geosyntec.com
Rebecca Daprato
321-795-1303
Please ~~Report~~ note TCE, cDCE, and VC are only to be reported

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1:	6-22-17 1530	1:	6/23/17 10:30
2:		2:	
3:		3:	

SHIPMENT METHOD
OUT 6/22/2017 VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: 39B Tunnel
PROJECT #: FR1352E
SITE ADDRESS:
SEND REPORT TO: Rebecca Daprato (See Comments)
INVOICE TO:
(IF DIFFERENT FROM ABOVE)
PO#:
STATE PROGRAM (if any): _____ E-mail? Y / N Fax? Y / N
QUOTE #:_____ DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY; IF NO TAT IS MARKED ON COC, AES WILL PROCEED AS STANDARD TAT.
Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc. Samples are disposed of 30 days after collection unless prior arrangements have been made.

*SAMPLE MATRIX: IA = Indoor Air AA = Ambient Air SS = Subslab SV = Soil Vapor O = Other (specify)

AES, Inc., assumes no liability with respect to the collection and shipment of these samples.

Analytical Environmental Services, Inc

Date: 29-Jun-17

Client: Advanced Env Labs
Project: 39B Tunnel
Lab ID: 1706N51

Case Narrative

Volatiles Organic Compounds Analysis by Method TO-15:

Acetone, Isopropyl alcohol, Toluene & n-Hexane values for the QC sample 1706N51-005ADUP is "E" qualified indicating estimated values over linear calibration range.

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 29-Jun-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0001-20170621
Project Name:	39B Tunnel	**Collection Date:**	6/21/2017 3:33:00 PM
Lab ID:	1706N51-001	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	244784	2	06/28/2017 09:14	MD
Trichloroethene	BRL	1.1		ug/m3	244784	2	06/28/2017 09:14	MD
Vinyl chloride	BRL	0.51		ug/m3	244784	2	06/28/2017 09:14	MD
Surr: 4-Bromofluorobenzene	95.5	70-130		%REC	244784	2	06/28/2017 09:14	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 29-Jun-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0002-20170621
Project Name:	39B Tunnel	**Collection Date:**	6/21/2017 3:42:00 PM
Lab ID:	1706N51-002	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	244784	2	06/28/2017 10:07	MD
Trichloroethene	BRL	1.1		ug/m3	244784	2	06/28/2017 10:07	MD
Vinyl chloride	BRL	0.51		ug/m3	244784	2	06/28/2017 10:07	MD
Surr: 4-Bromofluorobenzene	94.5	70-130		%REC	244784	2	06/28/2017 10:07	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 29-Jun-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0003-20170621
Project Name:	39B Tunnel	**Collection Date:**	6/21/2017 3:49:00 PM
Lab ID:	1706N51-003	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS	**TO-15**			**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	244784	2	06/28/2017 11:01	MD
Trichloroethene	BRL	1.1		ug/m3	244784	2	06/28/2017 11:01	MD
Vinyl chloride	BRL	0.51		ug/m3	244784	2	06/28/2017 11:01	MD
Surr: 4-Bromofluorobenzene	92.2	70-130		%REC	244784	2	06/28/2017 11:01	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 29-Jun-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0004-20170621
Project Name:	39B Tunnel	**Collection Date:**	6/21/2017 3:40:00 PM
Lab ID:	1706N51-004	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	0.87	0.79		ug/m3	244784	2	06/28/2017 11:54	MD
Trichloroethene	14	1.1		ug/m3	244784	2	06/28/2017 11:54	MD
Vinyl chloride	BRL	0.51		ug/m3	244784	2	06/28/2017 11:54	MD
Surr: 4-Bromofluorobenzene	96	70-130		%REC	244784	2	06/28/2017 11:54	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 29-Jun-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0005-20170621
Project Name:	39B Tunnel	**Collection Date:**	6/21/2017 4:54:00 PM
Lab ID:	1706N51-005	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	244784	2	06/28/2017 12:48	MD
Trichloroethene	BRL	1.1		ug/m3	244784	2	06/28/2017 12:48	MD
Vinyl chloride	BRL	0.51		ug/m3	244784	2	06/28/2017 12:48	MD
Surr: 4-Bromofluorobenzene	97.8	70-130		%REC	244784	2	06/28/2017 12:48	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample Receipt Checklist for Air Canisters

Client Advanced Env. Labs Work Order Number 1706N51

Checklist completed by _____ 6/23/17
Signature Date

Carrier name: FedEx ✓ UPS____ Courier____ Client____ US Mail____ Other_____

Shipping container in good condition?	Yes ✓ No___ Not Present___
Custody seals intact on shipping container?	Yes___ No___ Not Present ✓
Chain of custody present?	Yes ✓ No___
Chain of custody signed when relinquished and received?	Yes ✓ No___
Chain of custody agrees with sample labels?	Yes ✓ No___
Field data sheets present?	Yes___ No ✓
Sample containers intact?	Yes ✓ No___

If no, explain: _____

All samples received within holding time?	Yes ✓ No___
Was TAT marked on the COC?	Yes ✓ No___
Proceed with Standard TAT as per project history?	Yes___ No___ Not Applicable ✓
All canisters received per Bottle Order issued?	Yes ✓ No___

See Case Narrative for resolution of the Non-Conformance.

Client: Advanced Env Labs
Project Name: 39B Tunnel
Workorder: 1706N51

ANALYTICAL QC SUMMARY REPORT

BatchID: 244784

Sample ID: **MB-244784**	Client ID:		Units: **ppbv**	Prep Date: **06/27/2017**	Run No: **346464**
SampleType: **MBLK**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **244784**	Analysis Date: **06/27/2017**	Seq No: **7608037**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	BRL	0.20									
Trichloroethene	BRL	0.20									
Vinyl chloride	BRL	0.20									
Surr: 4-Bromofluorobenzene	3.490	0	4.000		87.2	70	130				

Sample ID: **LCS-244784**	Client ID:		Units: **ppbv**	Prep Date: **06/27/2017**	Run No: **346464**
SampleType: **LCS**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **244784**	Analysis Date: **06/27/2017**	Seq No: **7607983**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	3.570	0.20	4.000		89.2	70	130				
Trichloroethene	3.960	0.20	4.000		99.0	70	130				
Vinyl chloride	3.560	0.20	4.000		89.0	70	130				
Surr: 4-Bromofluorobenzene	3.830	0	4.000		95.8	70	130				

Sample ID: **1706N51-005ADUP**	Client ID: **39B-AIR0005-20170621**		Units: **ppbv**	Prep Date: **06/27/2017**	Run No: **346464**
SampleType: **DUP**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **244784**	Analysis Date: **06/28/2017**	Seq No: **7608269**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	BRL	0.20						0	0	25	
Trichloroethene	BRL	0.20						0	0	25	
Vinyl chloride	BRL	0.20						0	0	25	
Surr: 4-Bromofluorobenzene	3.860	0	4.000		96.5	70	130	3.910	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

July 19, 2017

Mike Burcham
Geosyntec Consultants
6770 S Washington Ave Ste 3
Casselberry, FL 32730

RE: Workorder: G1705757 LC39B

Dear Mike Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Monday, July 10, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

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Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

SAMPLE SUMMARY

Workorder: G1705757 LC39B

Lab ID	Sample ID	Matrix	Date Collected	Date Received
G1705757001	39B-AIR0001-20170706	Air	7/6/2017 15:43	7/12/2017 12:00
G1705757002	39B-AIR0002-20170706.	Air	7/6/2017 15:45	7/12/2017 12:00
G1705757003	39B-AIR0003-20170706.	Air	7/6/2017 16:14	7/12/2017 12:00
G1705757004	39B-AIR0004-20170706.	Air	7/6/2017 16:43	7/12/2017 12:00
G1705757005	39B-AIR0005-20170706.	Air	7/6/2017 16:57	7/12/2017 12:00

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Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

ANALYTICAL RESULTS QUALIFIERS

Workorder: G1705757 LC39B

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

CERTIFICATE OF ANALYSIS

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ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

VAPOR/AIR CHAIN OF CUSTODY

Work Order #: 30981 GA705757

Page 1 of 1

Company: Geosyntec Consultants	Address: 6770 S. Washington Ave, Ste 3, Titusville FL 32780	Bottle Order #:	Turnaround Time (Circle One): (Standard) 3 Day Rush 2 Day Rush Other
Phone: 321-960-7789	Fax:		
Sampled by: M. Burcham	Signature:		

#	Sample ID	Sample Start Date	Sample Start Time (24hr)	Sample Finish Date	Sample Finish Time (24 hr)	Sample Matrix*	Canister Serial #	Flow Controller ID	Canister Pressure In Field ("Hg) Start	Canister Pressure In Field ("Hg) Stop	ANALYSIS REQUESTED TO-15	Remarks
1	39B-A-0001-20170706	7/6/17	0743	7/6/17	1543	AA	13239	01198	-27.5	0		001
2	39B-A-0002-20170706		0746	7/6/17	1545		20231	01192	<-30.0	-4.8		002
3	39B-A-0003-20170706		0815	7/6/17	1614		23238	01161	<-30	-4.8		003
4	39B-A-0004-20170706		0856	7/6/17	1643	IA	20232	01185	-29.0	-1.2		004
5	39B-A-0005-20170706		0907	7/6/17	1657		18781	01157	-30.0	-4.0		005
6												
7												
8												
9												
10												

SPECIAL INSTRUCTIONS/COMMENTS:	RELINQUISHED BY: DATE/TIME:	RECEIVED BY: DATE/TIME:	PROJECT INFORMATION
If specialized list is required, list analytes here: PCE, TCE, cDCE, VC only RDaprato@Geosyntec.com 321-795-1303	1: 7/6/17 1805	1:	PROJECT NAME: LC39B
	2:	2:	PROJECT #: FB1352E
	3:	3:	SITE ADDRESS: KSC
			SEND REPORT TO: Rebecca Daprato
	SHIPMENT METHOD		INVOICE TO: (IF DIFFERENT FROM ABOVE)
	OUT / / VIA		PO#:
	IN / / VIA		STATE PROGRAM (if any): E-mail? Y / N Fax? Y / N
	CLIENT (FedEx) UPS MAIL COURIER		QUOTE #: DATA PACKAGE: I II III IV
	GREYHOUND OTHER		

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY; IF NO TAT IS MARKED ON COC, AES WILL PROCEED AS STANDARD TAT.
Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc. Samples are disposed of 30 days after collection unless prior arrangements have been made.

*SAMPLE MATRIX: IA = Indoor Air AA = Ambient Air SS = Subslab SV = Soil Vapor O = Other (specify)

**AES, Inc., assumes no liability with respect to the collection and shipment of these samples **

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

July 11, 2017

Todd Romero
Advanced Env Labs

4965 SW 41st Blvd.
Gainesville FL 32608

RE: LC39B

Dear Todd Romero: Order No: 1707299

Analytical Environmental Services, Inc. received 5 samples on 7/10/2017 9:30:00 AM
for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Air & Emissions for Volatile Organics effective 07/01/16-06/30/17.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Tyrel Heckendorf

Project Manager

APPENDIX

Compound	CAS #	Alternate Name	TO-14A	TO-15	SOP
Acetone	67-64-1				X
Allyl chloride	107-05-1	3-Chloropropene		X	
Benzene	71-43-2		X	X	
Benzyl chloride	100-44-7		X	X	
Bromodichloromethane	75-27-4	Dichlorobromomethane			X
Bromoform	75-25-2	Tribromomethane		X	
Bromomethane	74-83-9	Methyl bromide	X	X	
1,3-Butadiene	106-99-0			X	
Carbon disulfide	75-15-0			X	
Carbon tetrachloride	56-23-5		X	X	
Chlorobenzene	108-90-7		X	X	
Chloroethane	75-00-3	Ethyl chloride	X	X	
Chloroform	67-66-3		X	X	
Chloromethane	74-87-3	Methyl chloride	X	X	
Cyclohexane	110-82-7				X
Dibromochloromethane	124-48-1	Chlorodibromomethane			X
1,2-Dibromoethane	106-93-4	EDB/Ethylene dibromide	X	X	
1,2-Dichlorobenzene	95-50-1	*o*-Dichlorobenzene	X	X	
1,3-Dichlorobenzene	541-73-1	*m*-Dichlorobenzene	X	X	
1,4-Dichlorobenzene	106-46-7	p-Dichlorobenzene	X	X	
Dichlorodifluoromethane	75-71-8	Freon-12	X		
1,1-Dichloroethane	75-34-3		X	X	
1,2-Dichloroethane	107-06-2		X	X	
1,1-Dichloroethene	75-35-4	1,1-Dichloroethylene	X	X	
cis-1,2-Dichloroethene	156-59-2	*cis*-1,2-Dichloroethylene	X	X	
trans-1,2-Dichloroethene	156-60-5	*trans*-1,2-Dichloroethylene		X	
1,2-Dichloropropane	78-87-5		X	X	
cis-1,3-Dichloropropene	10061-01-5		X	X	
trans-1,3-Dichloropropene	10061-02-6		X	X	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	Freon-114	X		
1,4-Dioxane	123-91-1	1,4-Diethylene oxide		X	
Ethyl acetate	141-78-6	Acetic acid, ethyl ester			X
Ethylbenzene	100-41-4		X	X	
4-Ethyltoluene	622-96-8				X
n-Heptane	142-82-5	Heptane			X
Hexachlorobutadiene	87-68-3	Hexachloro-1,3-butadiene	X	X	

n-Hexane	110-54-3	Hexane		X	
Compound	**CAS #**	**Alternate Name**	**TO-14A**	**TO-15**	**SOP**
2-Hexanone	591-78-6	Methyl butyl ketone			X
Methylene chloride	75-09-2	Dichloromethane	X	X	
Methyl tert-butyl ether	1634-04-4	MTBE		X	
Methyl ethyl ketone	78-93-3	MEK/2-Butanone		X	
Methyl isobutyl ketone	108-10-1	4-Methyl-2-pentanone		X	
2-Propanol	67-63-0	Isopropanol/Isopropyl alcohol			X
Propene	115-07-1	Propylene			X
Styrene	100-42-5			X	
1,1,2,2-Tetrachloroethane	79-34-5		X	X	
Tetrachloroethene	127-18-4	Tetrachloroethylene	X	X	
Tetrahydrofuran	109-99-9				X
Toluene	108-88-3			X	
1,2,4-Trichlorobenzene	120-82-1			X	
1,1,1-Trichloroethane	74-55-6			X	
1,1,2-Trichloroethane	79-00-5			X	
Trichloroethene	79-01-6	Trichloroethylene		X	
Trichlorofluoromethane	75-69-4	Freon-11	X		
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	Freon-113	X		
1,2,4-Trimethylbenzene	95-63-6		X	X	
1,3,5-Trimethylbenzene	108-67-8		X	X	
2,2,4-Trimethylpentane	540-84-1	Isooctane		X	
Vinyl acetate	108-05-04			X	
Vinyl bromide	593-60-2	Bromoethene		X	
Vinyl chloride	75-01-4	Chloroethene	X	X	
Xylenes, Total	1330-20-7		X	X	
m/p-Xylene	179601-23-1		X	X	
o-Xylene	95-47-6		X	X	

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

VAPOR/AIR CHAIN OF CUSTODY

Work Order #: 1707299

Page 1 of 1

Company: Geosyntec Consultant	Address: 6770 S. Washington Ave., Ste 3, Titusville FL, 32780	Bottle Order #:	Turnaround Time (Circle One): (Standard) 3 Day Rush; 2 Day Rush; Other
Phone: 321-960-9789	Fax:		
Sampled by: M. Burcham	Signature:		

#	Sample ID	Sample Start Date	Sample Start Time (24hr)	Sample Finish Date	Sample Finish Time (24 hr)	Sample Matrix*	Canister Serial #	Flow Controller ID	Canister Pressure In Field ("Hg) Start	Canister Pressure In Field ("Hg) Stop	ANALYSIS REQUESTED TO-15*	Remarks
1	39B-Air-0001-20170706	7/6/17	0743	7/6/17	1543	AA	23239 01198	01198	-27.5	0		
2	39B-Air-0002-20170706		0746	7/6/17	1545		20231	01192	<-30.0	-4.0		
3	39B-Air-0003-20170706		0815	7/6/17	1614		23238	01161	<-30.0	-4.8		
4	39B-Air-0004-20170706		0856	7/6/17	1643	IA	20232	01185	-29.0	-1.2		
5	39B-Air-0005-20170706		0907	7/6/17	1657		18781	01157	-30.0	-4.0		
6												
7												
8												
9												
10												

SPECIAL INSTRUCTIONS/COMMENTS:
If specialized list is required, list analytes here:
*TCE, cDCE, VC only
RDaprato@Geosyntec.com
321-795-1303

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1:	7/6/17 1805	1:	7/10/17 930
2:		2:	
3:		3:	

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: LC39B
PROJECT #: FB1352E
SITE ADDRESS: KSC
SEND REPORT TO: Rebecca Daprato
INVOICE TO:
(IF DIFFERENT FROM ABOVE)
PO#:
STATE PROGRAM (if any): _____ E-mail? Y / N Fax? Y / N
QUOTE #:_____ DATA PACKAGE: I II III IV

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Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc. **Samples are disposed of 30 days after collection unless prior arrangements have been made.**

*SAMPLE MATRIX: IA = Indoor Air AA = Ambient Air SS = Subslab SV = Soil Vapor O = Other (specify)

AES, Inc., assumes no liability with respect to the collection and shipment of these samples.

White Copy - Original; Blue Copy - Client

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0001-20170706
Project Name:	LC39B	**Collection Date:**	7/6/2017 3:43:00 PM
Lab ID:	1707299-001	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	245273	2	07/11/2017 03:20	MD
Trichloroethene	BRL	1.1		ug/m3	245273	2	07/11/2017 03:20	MD
Vinyl chloride	BRL	0.51		ug/m3	245273	2	07/11/2017 03:20	MD
Surr: 4-Bromofluorobenzene	94	70-130		%REC	245273	2	07/11/2017 03:20	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0002-20170706
Project Name:	LC39B	**Collection Date:**	7/6/2017 3:45:00 PM
Lab ID:	1707299-002	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	245273	2	07/11/2017 04:13	MD
Trichloroethene	BRL	1.1		ug/m3	245273	2	07/11/2017 04:13	MD
Vinyl chloride	BRL	0.51		ug/m3	245273	2	07/11/2017 04:13	MD
Surr: 4-Bromofluorobenzene	89.8	70-130		%REC	245273	2	07/11/2017 04:13	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0003-20170706
Project Name:	LC39B	**Collection Date:**	7/6/2017 4:14:00 PM
Lab ID:	1707299-003	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	1.3	0.79		ug/m3	245273	2	07/11/2017 05:07	MD
Trichloroethene	BRL	1.1		ug/m3	245273	2	07/11/2017 05:07	MD
Vinyl chloride	0.69	0.51		ug/m3	245273	2	07/11/2017 05:07	MD
Surr: 4-Bromofluorobenzene	89.5	70-130		%REC	245273	2	07/11/2017 05:07	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0004-20170706
Project Name:	LC39B	**Collection Date:**	7/6/2017 4:43:00 PM
Lab ID:	1707299-004	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	245273	2	07/11/2017 10:36	MD
Trichloroethene	BRL	1.1		ug/m3	245273	2	07/11/2017 10:36	MD
Vinyl chloride	BRL	0.51		ug/m3	245273	2	07/11/2017 10:36	MD
Surr: 4-Bromofluorobenzene	96.8	70-130		%REC	245273	2	07/11/2017 10:36	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0005-20170706
Project Name:	LC39B	**Collection Date:**	7/6/2017 4:57:00 PM
Lab ID:	1707299-005	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	245273	2	07/11/2017 11:30	MD
Trichloroethene	1.3	1.1		ug/m3	245273	2	07/11/2017 11:30	MD
Vinyl chloride	BRL	0.51		ug/m3	245273	2	07/11/2017 11:30	MD
Surr: 4-Bromofluorobenzene	94.2	70-130		%REC	245273	2	07/11/2017 11:30	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample Receipt Checklist for Air Canisters

Client Advanced Work Order Number 1707299

Checklist completed by _____ 7/10/17
Signature Date

Carrier name: FedEx ✓ UPS____ Courier____ Client____ US Mail____ Other____

Shipping container in good condition?	Yes ✓	No___	Not Present___
Custody seals intact on shipping container?	Yes___	No___	Not Present ✓
Chain of custody present?	Yes ✓	No___	
Chain of custody signed when relinquished and received?	Yes ✓	No___	
Chain of custody agrees with sample labels?	Yes ✓	No___	
Field data sheets present?	Yes___	No ✓	
Sample containers intact?	Yes ✓	No___	

If no, explain: _____

All samples received within holding time?	Yes ✓	No___	
Was TAT marked on the COC?	Yes ✓	No___	
Proceed with Standard TAT as per project history?	Yes___	No___	Not Applicable ✓
All canisters received per Bottle Order issued?	Yes___	No___	

See Case Narrative for resolution of the Non-Conformance.

Client: Advanced Env Labs
Project Name: LC39B
Workorder: 1707299

ANALYTICAL QC SUMMARY REPORT

BatchID: 245273

Sample ID: **MB-245273**	Client ID:		Units: **ppbv**	Prep Date: **07/10/2017**	Run No: **347280**
SampleType: **MBLK**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **245273**	Analysis Date: **07/10/2017**	Seq No: **7626902**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	BRL	0.20									
Trichloroethene	BRL	0.20									
Vinyl chloride	BRL	0.20									
Surr: 4-Bromofluorobenzene	3.650	0	4.000		91.2	70	130				

Sample ID: **LCS-245273**	Client ID:		Units: **ppbv**	Prep Date: **07/10/2017**	Run No: **347280**
SampleType: **LCS**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **245273**	Analysis Date: **07/10/2017**	Seq No: **7626919**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	1.800	0.20	2.000		90.0	70	130				
Trichloroethene	1.960	0.20	2.000		98.0	70	130				
Vinyl chloride	1.710	0.20	2.000		85.5	70	130				
Surr: 4-Bromofluorobenzene	3.760	0	4.000		94.0	70	130				

Sample ID: **1707299-004ADUP**	Client ID: **39B-AIR0004-20170706**		Units: **ppbv**	Prep Date: **07/10/2017**	Run No: **347485**
SampleType: **DUP**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **245273**	Analysis Date: **07/13/2017**	Seq No: **7631593**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	BRL	0.20						0	0	25	
Trichloroethene	BRL	0.20						0	0	25	
Vinyl chloride	BRL	0.20						0	0	25	
Surr: 4-Bromofluorobenzene	3.800	0	4.000		95.0	70	130	3.870	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

July 25, 2017

Mike Burcham
Geosyntec Consultants
6770 S Washington Ave Ste 3
Casselberry, FL 32730

RE: Workorder: G1705961 LC39B

Dear Mike Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, July 18, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Advanced Environmental Laboratories, Inc..

Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

SAMPLE SUMMARY

Workorder: G1705961 LC39B

Lab ID	Sample ID	Matrix	Date Collected	Date Received
G1705961001	39B-AIR0001-20170713	Air	7/13/2017 16:32	7/18/2017 12:00
G1705961002	39B-AIR0002-20170713	Air	7/13/2017 16:35	7/18/2017 12:00
G1705961003	39B-AIR0003-20170713	Air	7/13/2017 16:30	7/18/2017 12:00
G1705961004	39B-AIR0004-20170713	Air	7/13/2017 16:15	7/18/2017 12:00
G1705961005	39B-AIR0005-20170713	Air	7/13/2017 16:10	7/18/2017 12:00

CERTIFICATE OF ANALYSIS

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Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

ANALYTICAL RESULTS QUALIFIERS

Workorder: G1705961 LC39B

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

CERTIFICATE OF ANALYSIS

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ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

July 24, 2017

Todd Romero
Advanced Env Labs

4965 SW 41st Blvd.
Gainesville FL 32608

RE: LC39B

Dear Todd Romero: Order No: 1707D55

Analytical Environmental Services, Inc. received 5 samples on 7/17/2017 10:15:00 AM
for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Air & Emissions for Volatile Organics effective 07/01/16-06/30/17.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Tyrel Heckendorf

Project Manager

APPENDIX

Compound	CAS #	Alternate Name	TO-14A	TO-15	SOP
Acetone	67-64-1				X
Allyl chloride	107-05-1	3-Chloropropene		X	
Benzene	71-43-2		X	X	
Benzyl chloride	100-44-7		X	X	
Bromodichloromethane	75-27-4	Dichlorobromomethane			X
Bromoform	75-25-2	Tribromomethane		X	
Bromomethane	74-83-9	Methyl bromide	X	X	
1,3-Butadiene	106-99-0			X	
Carbon disulfide	75-15-0			X	
Carbon tetrachloride	56-23-5		X	X	
Chlorobenzene	108-90-7		X	X	
Chloroethane	75-00-3	Ethyl chloride	X	X	
Chloroform	67-66-3		X	X	
Chloromethane	74-87-3	Methyl chloride	X	X	
Cyclohexane	110-82-7				X
Dibromochloromethane	124-48-1	Chlorodibromomethane			X
1,2-Dibromoethane	106-93-4	EDB/Ethylene dibromide	X	X	
1,2-Dichlorobenzene	95-50-1	*o*-Dichlorobenzene	X	X	
1,3-Dichlorobenzene	541-73-1	*m*-Dichlorobenzene	X	X	
1,4-Dichlorobenzene	106-46-7	p-Dichlorobenzene	X	X	
Dichlorodifluoromethane	75-71-8	Freon-12	X		
1,1-Dichloroethane	75-34-3		X	X	
1,2-Dichloroethane	107-06-2		X	X	
1,1-Dichloroethene	75-35-4	1,1-Dichloroethylene	X	X	
cis-1,2-Dichloroethene	156-59-2	*cis*-1,2-Dichloroethylene	X	X	
trans-1,2-Dichloroethene	156-60-5	*trans*-1,2-Dichloroethylene		X	
1,2-Dichloropropane	78-87-5		X	X	
cis-1,3-Dichloropropene	10061-01-5		X	X	
trans-1,3-Dichloropropene	10061-02-6		X	X	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	Freon-114	X		
1,4-Dioxane	123-91-1	1,4-Diethylene oxide		X	
Ethyl acetate	141-78-6	Acetic acid, ethyl ester			X
Ethylbenzene	100-41-4		X	X	
4-Ethyltoluene	622-96-8				X
n-Heptane	142-82-5	Heptane			X
Hexachlorobutadiene	87-68-3	Hexachloro-1,3-butadiene	X	X	

n-Hexane	110-54-3	Hexane		X	
Compound	**CAS #**	**Alternate Name**	**TO-14A**	**TO-15**	**SOP**
2-Hexanone	591-78-6	Methyl butyl ketone			X
Methylene chloride	75-09-2	Dichloromethane	X	X	
Methyl tert-butyl ether	1634-04-4	MTBE		X	
Methyl ethyl ketone	78-93-3	MEK/2-Butanone		X	
Methyl isobutyl ketone	108-10-1	4-Methyl-2-pentanone		X	
2-Propanol	67-63-0	Isopropanol/Isopropyl alcohol			X
Propene	115-07-1	Propylene			X
Styrene	100-42-5			X	
1,1,2,2-Tetrachloroethane	79-34-5		X	X	
Tetrachloroethene	127-18-4	Tetrachloroethylene	X	X	
Tetrahydrofuran	109-99-9				X
Toluene	108-88-3			X	
1,2,4-Trichlorobenzene	120-82-1			X	
1,1,1-Trichloroethane	74-55-6			X	
1,1,2-Trichloroethane	79-00-5			X	
Trichloroethene	79-01-6	Trichloroethylene		X	
Trichlorofluoromethane	75-69-4	Freon-11	X		
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	Freon-113	X		
1,2,4-Trimethylbenzene	95-63-6		X	X	
1,3,5-Trimethylbenzene	108-67-8		X	X	
2,2,4-Trimethylpentane	540-84-1	Isooctane		X	
Vinyl acetate	108-05-04			X	
Vinyl bromide	593-60-2	Bromoethene		X	
Vinyl chloride	75-01-4	Chloroethene	X	X	
Xylenes, Total	1330-20-7		X	X	
m/p-Xylene	179601-23-1		X	X	
o-Xylene	95-47-6		X	X	

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

VAPOR/AIR CHAIN OF CUSTODY

Work Order #: 1707D55

Page 1 of 1

Company: GeoSyntec Consultants	Address: 6770 S. Washington Ave. Ste. 3, Titusville FL 32780	Bottle Order #:	Turnaround Time (Circle One): (Standard) 3 Day Rush 2 Day Rush Other
Phone: 321-960-9789	Fax:		
Sampled by: Ben Coppenger	Signature:		

#	Sample ID	Sample Start Date	Sample Start Time (24hr)	Sample Finish Date	Sample Finish Time (24 hr)	Sample Matrix*	Canister Serial #	Flow Controller ID	Canister Pressure In Field ("Hg) Start	Canister Pressure In Field ("Hg) Stop	ANALYSIS REQUESTED TO-15	Remarks
1	39B-AA0001-20170713	7/13/17	0833	7/13/17	1632	AA	01195	01154	-30	-6	Y	
2	39B-AA0002-20170713	"	0838	"	1635	"	01076	01203	-30	-7	Y	
3	39B-AA0003-20170713	"	0830	"	1630	"	01156	01155	-30	-4	Y	
4	39B-AA0004-20170713	"	0955	"	1615	IA	01229	01197	-30	-5	Y	
5	39B-AA0005-20170713	"	1002	"	1610	"	01207	01184	-30	0	Y	
6												
7												
8												
9												
10												

SPECIAL INSTRUCTIONS/COMMENTS:
If specialized list is required, list analytes here:
* TCE, cDCE, VC only

RDaprato@Geosyntec.com
321-795-1303

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1:	7-14-17 1530	1:	7/14/17 1045
2:		2:	
3:		3:	

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: 2C39B
PROJECT #: FR1352E
SITE ADDRESS: KSC
SEND REPORT TO: Rebecca Daprato
INVOICE TO:
(IF DIFFERENT FROM ABOVE)
PO#:
STATE PROGRAM (if any): _____ E-mail? Y / N Fax? Y / N
QUOTE #:_____ DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY; IF NO TAT IS MARKED ON COC, AES WILL PROCEED AS STANDARD TAT.
Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc. **Samples are disposed of 30 days after collection unless prior arrangements have been made.**

*SAMPLE MATRIX: IA = Indoor Air AA = Ambient Air SS = Subslab SV = Soil Vapor O = Other (specify)

AES, Inc., assumes no liability with respect to the collection and shipment of these samples.

White Copy - Original; Blue Copy - Client

Analytical Environmental Services, Inc

Date: 24-Jul-17

Client: Advanced Env Labs
Project: LC39B
Lab ID: 1707D55

Case Narrative

Toxic Organics in Air Analysis by Method TO-14A/15:

Toluene value for the QC sample 1707D66-003ADUP is "E" qualified indicating an estimated value over linear calibration range due to the level of target analyte present in the sample.

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 24-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR 0001-20170713
Project Name:	LC39B	**Collection Date:**	7/13/2017 4:32:00 PM
Lab ID:	1707D55-001	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS	**TO-15**			**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	245877	2	07/21/2017 23:46	MD
Trichloroethene	BRL	1.1		ug/m3	245877	2	07/21/2017 23:46	MD
Vinyl chloride	BRL	0.51		ug/m3	245877	2	07/21/2017 23:46	MD
Surr: 4-Bromofluorobenzene	97.5	70-130		%REC	245877	2	07/21/2017 23:46	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 24-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR 0002-20170713
Project Name:	LC39B	**Collection Date:**	7/13/2017 4:35:00 PM
Lab ID:	1707D55-002	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS	**TO-15**			**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	245877	2	07/22/2017 00:40	MD
Trichloroethene	BRL	1.1		ug/m3	245877	2	07/22/2017 00:40	MD
Vinyl chloride	BRL	0.51		ug/m3	245877	2	07/22/2017 00:40	MD
Surr: 4-Bromofluorobenzene	96.8	70-130		%REC	245877	2	07/22/2017 00:40	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 24-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR 0003-20170713
Project Name:	LC39B	**Collection Date:**	7/13/2017 4:30:00 PM
Lab ID:	1707D55-003	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	245877	2	07/22/2017 12:36	MD
Trichloroethene	BRL	1.1		ug/m3	245877	2	07/22/2017 12:36	MD
Vinyl chloride	BRL	0.51		ug/m3	245877	2	07/22/2017 12:36	MD
Surr: 4-Bromofluorobenzene	99	70-130		%REC	245877	2	07/22/2017 12:36	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 24-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR 0004-20170713
Project Name:	LC39B	**Collection Date:**	7/13/2017 4:15:00 PM
Lab ID:	1707D55-004	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	245877	2	07/22/2017 13:32	MD
Trichloroethene	BRL	1.1		ug/m3	245877	2	07/22/2017 13:32	MD
Vinyl chloride	BRL	0.51		ug/m3	245877	2	07/22/2017 13:32	MD
Surr: 4-Bromofluorobenzene	90.5	70-130		%REC	245877	2	07/22/2017 13:32	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 24-Jul-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR 0005-20170713
Project Name:	LC39B	**Collection Date:**	7/13/2017 4:10:00 PM
Lab ID:	1707D55-005	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	245877	2	07/22/2017 14:27	MD
Trichloroethene	BRL	1.1		ug/m3	245877	2	07/22/2017 14:27	MD
Vinyl chloride	BRL	0.51		ug/m3	245877	2	07/22/2017 14:27	MD
Surr: 4-Bromofluorobenzene	94.2	70-130		%REC	245877	2	07/22/2017 14:27	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample Receipt Checklist for Air Canisters

Client Advanced Env Labs/Ga Work Order Number 1707055

Checklist completed by Pavs Masaeli 7/17/17

Signature Date

Carrier name: FedEx ✓ UPS___ Courier___ Client___ US Mail___ Other_____

Shipping container in good condition?	Yes ✓	No___	Not Present___
Custody seals intact on shipping container?	Yes___	No___	Not Present ✓
Chain of custody present?	Yes ✓	No___	
Chain of custody signed when relinquished and received?	Yes ✓	No___	
Chain of custody agrees with sample labels?	Yes ✓	No___	
Field data sheets present?	Yes___	No ✓	
Sample containers intact?	Yes ✓	No___	

If no, explain: _____

All samples received within holding time?	Yes ✓	No___	
Was TAT marked on the COC?	Yes ✓	No___	
Proceed with Standard TAT as per project history?	Yes___	No___	Not Applicable ✓
All canisters received per Bottle Order issued?	Yes ✓	No___	

See Case Narrative for resolution of the Non-Conformance.

Client: Advanced Env Labs
Project Name: LC39B
Workorder: 1707D55

ANALYTICAL QC SUMMARY REPORT

BatchID: 245877

Sample ID: **MB-245877**	Client ID:		Units: **ppbv**	Prep Date: **07/21/2017**	Run No: **348120**
SampleType: **MBLK**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **245877**	Analysis Date: **07/21/2017**	Seq No: **7646944**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	BRL	0.10									
Trichloroethene	BRL	0.10									
Vinyl chloride	BRL	0.10									
Surr: 4-Bromofluorobenzene	1.985	0	2.000		99.2	70	130				

Sample ID: **LCS-245877**	Client ID:		Units: **ppbv**	Prep Date: **07/21/2017**	Run No: **348120**
SampleType: **LCS**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **245877**	Analysis Date: **07/21/2017**	Seq No: **7646945**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	3.920	0.20	4.000		98.0	70	130				
Trichloroethene	4.280	0.20	4.000		107	70	130				
Vinyl chloride	4.190	0.20	4.000		105	70	130				
Surr: 4-Bromofluorobenzene	3.850	0	4.000		96.2	70	130				

Sample ID: **1707D66-003ADUP**	Client ID: **VS-3**		Units: **ppbv**	Prep Date: **07/21/2017**	Run No: **348120**
SampleType: **DUP**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **245877**	Analysis Date: **07/22/2017**	Seq No: **7646991**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	0.3600	0.20						0.4100	13.0	25	
Trichloroethene	4.160	0.20						3.910	6.20	25	
Vinyl chloride	BRL	0.20						0	0	25	
Surr: 4-Bromofluorobenzene	3.700	0	4.000		92.5	70	130	3.950	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

August 14, 2017

Mike Burcham
Geosyntec Consultants
6770 S Washington Ave Ste 3
Casselberry, FL 32730

RE: Workorder: G1706758 LC39B

Dear Jim Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, August 10, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

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Advanced Environmental Laboratories, Inc.
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Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

SAMPLE SUMMARY

Workorder: G1706758 LC39B

Lab ID	Sample ID	Matrix	Date Collected	Date Received
G1706758001	39B-AIR0001-20170727	Air	7/27/2017 16:59	8/10/2017 09:50
G1706758002	39B-AIR0002-20170727	Air	7/27/2017 16:00	8/10/2017 09:50
G1706758003	39B-AIR0003-20170727	Air	7/27/2017 16:10	8/10/2017 09:50
G1706758004	39B-AIR0004-20170727	Air	7/27/2017 15:45	8/10/2017 09:50
G1706758005	39B-AIR0005-20170727	Air	7/27/2017 15:39	8/10/2017 09:50

CERTIFICATE OF ANALYSIS

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Phone: (352) 377-2349
Fax: (352) 395-6639

ANALYTICAL RESULTS QUALIFIERS

Workorder: G1706758 LC39B

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

CERTIFICATE OF ANALYSIS

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ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

August 11, 2017

Todd Romero
Advanced Env Labs

4965 SW 41st Blvd.
Gainesville FL 32608

RE: LC39B

Dear Todd Romero: Order No: 1708227

Analytical Environmental Services, Inc. received 5 samples on 8/2/2017 10:25:00 AM
for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Air & Emissions for Volatile Organics effective 07/01/16-06/30/17.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,



Tyrel Heckendorf

Project Manager

APPENDIX

Compound	CAS #	Alternate Name	TO-14A	TO-15	SOP
Acetone	67-64-1				X
Allyl chloride	107-05-1	3-Chloropropene		X	
Benzene	71-43-2		X	X	
Benzyl chloride	100-44-7		X	X	
Bromodichloromethane	75-27-4	Dichlorobromomethane			X
Bromoform	75-25-2	Tribromomethane		X	
Bromomethane	74-83-9	Methyl bromide	X	X	
1,3-Butadiene	106-99-0			X	
Carbon disulfide	75-15-0			X	
Carbon tetrachloride	56-23-5		X	X	
Chlorobenzene	108-90-7		X	X	
Chloroethane	75-00-3	Ethyl chloride	X	X	
Chloroform	67-66-3		X	X	
Chloromethane	74-87-3	Methyl chloride	X	X	
Cyclohexane	110-82-7				X
Dibromochloromethane	124-48-1	Chlorodibromomethane			X
1,2-Dibromoethane	106-93-4	EDB/Ethylene dibromide	X	X	
1,2-Dichlorobenzene	95-50-1	*o*-Dichlorobenzene	X	X	
1,3-Dichlorobenzene	541-73-1	*m*-Dichlorobenzene	X	X	
1,4-Dichlorobenzene	106-46-7	p-Dichlorobenzene	X	X	
Dichlorodifluoromethane	75-71-8	Freon-12	X		
1,1-Dichloroethane	75-34-3		X	X	
1,2-Dichloroethane	107-06-2		X	X	
1,1-Dichloroethene	75-35-4	1,1-Dichloroethylene	X	X	
cis-1,2-Dichloroethene	156-59-2	*cis*-1,2-Dichloroethylene	X	X	
trans-1,2-Dichloroethene	156-60-5	*trans*-1,2-Dichloroethylene		X	
1,2-Dichloropropane	78-87-5		X	X	
cis-1,3-Dichloropropene	10061-01-5		X	X	
trans-1,3-Dichloropropene	10061-02-6		X	X	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	Freon-114	X		
1,4-Dioxane	123-91-1	1,4-Diethylene oxide		X	
Ethyl acetate	141-78-6	Acetic acid, ethyl ester			X
Ethylbenzene	100-41-4		X	X	
4-Ethyltoluene	622-96-8				X
n-Heptane	142-82-5	Heptane			X
Hexachlorobutadiene	87-68-3	Hexachloro-1,3-butadiene	X	X	

n-Hexane	110-54-3	Hexane		X	
Compound	**CAS #**	**Alternate Name**	**TO-14A**	**TO-15**	**SOP**
2-Hexanone	591-78-6	Methyl butyl ketone			X
Methylene chloride	75-09-2	Dichloromethane	X	X	
Methyl tert-butyl ether	1634-04-4	MTBE		X	
Methyl ethyl ketone	78-93-3	MEK/2-Butanone		X	
Methyl isobutyl ketone	108-10-1	4-Methyl-2-pentanone		X	
2-Propanol	67-63-0	Isopropanol/Isopropyl alcohol			X
Propene	115-07-1	Propylene			X
Styrene	100-42-5			X	
1,1,2,2-Tetrachloroethane	79-34-5		X	X	
Tetrachloroethene	127-18-4	Tetrachloroethylene	X	X	
Tetrahydrofuran	109-99-9				X
Toluene	108-88-3			X	
1,2,4-Trichlorobenzene	120-82-1			X	
1,1,1-Trichloroethane	74-55-6			X	
1,1,2-Trichloroethane	79-00-5			X	
Trichloroethene	79-01-6	Trichloroethylene		X	
Trichlorofluoromethane	75-69-4	Freon-11	X		
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	Freon-113	X		
1,2,4-Trimethylbenzene	95-63-6		X	X	
1,3,5-Trimethylbenzene	108-67-8		X	X	
2,2,4-Trimethylpentane	540-84-1	Isooctane		X	
Vinyl acetate	108-05-04			X	
Vinyl bromide	593-60-2	Bromoethene		X	
Vinyl chloride	75-01-4	Chloroethene	X	X	
Xylenes, Total	1330-20-7		X	X	
m/p-Xylene	179601-23-1		X	X	
o-Xylene	95-47-6		X	X	

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

VAPOR/AIR FIELD TEST DATA SHEET

Work Order #: 1708227

Page 1 of 1

Company:	Address:	Project Name:	Project Number:
GeoSyntec	6770 S. Washington Titusville, FL	~~FL1352-E~~ 18 day LC39B	FL1352-E 18
Phone: 321/267628	Fax:	Site Address: KSC, FL	
Sampled by: D. Sizemore	Signature:		

SAMPLING INFORMATION

#	Sample ID	Canister Serial #	Flow Controller ID#	Canister Cert. ID#	Sample Start Date	Sample Start Time (24hr)	Sample Start Canister Pressure in Field ("Hg)	Sample Start Flow Control Readout (mL/min)	Sample Start Temperature Interior (°F)	Sample Start Temperature Ambient (°F)	Sample Stop Date	Sample Stop Time (24hr)	Sample Stop Canister Pressure in Field ("Hg)	Sample Stop Flow Control Readout (mL/min)	Sample Stop Temperature Interior (°F)	Sample Stop Temperature Ambient (°F)
1	~~398-TO~~															
2	398-AIR-0001.0-20170727	24013	1214	24013	7/27/17	755	30			79°	7/27/17	1159	6			90°
3	398-AIR-002.0-20170727	24338	1183	24338	7/27/17	~~1200~~ 756	30			79°	7/27/17	1600	3			89°
4	398-AIR-003.0-20170727	17455	1211	17455	7/27/17	759	30			80°	7/27/17	1610	5			91°
5	398-AIR-004.0-20170727	~~17464~~ 1090	1182	17464	7/27/17	742	30			80°	7/27/17	1545	4			89°
6	398-AIR-005.0-20170727	24311	1216	24311	7/27/17	745	30			78°	7/27/17	1539	4			85
7																
8																
9																
10																

Date Shipped Out From Lab:

Date Received Back To Lab:

Weather Conditions
Ambient Temp Avg:
Ambient Temp High/Low:
Indoor Air Temp Avg:
Barometric Pressure:
Wind Speed/Direction:
Other:

Field Notes:

7/30/17

Rec. Mufler 8/2/17 0:25 Fax

Analytical Environmental Services, Inc

Date: 11-Aug-17

Client: Advanced Env Labs
Project: LC39B
Lab ID: 1708227

Case Narrative

Volatiles Organic Compounds Analysis by Method TO-14/15:

Isopropyl alcohol & Acetone values for the QC sample 1708227-005ADUP are "E" qualified indicating estimated values over linear calibration range.

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0001-20170727
Project Name:	LC39B	**Collection Date:**	7/27/2017 4:59:00 PM
Lab ID:	1708227-001	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246667	2	08/07/2017 19:18	MD
Trichloroethene	BRL	1.1		ug/m3	246667	2	08/07/2017 19:18	MD
Vinyl chloride	BRL	0.51		ug/m3	246667	2	08/07/2017 19:18	MD
Surr: 4-Bromofluorobenzene	95.5	70-130		%REC	246667	2	08/07/2017 19:18	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0002-20170727
Project Name:	LC39B	**Collection Date:**	7/27/2017 4:00:00 PM
Lab ID:	1708227-002	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246667	2	08/07/2017 20:12	MD
Trichloroethene	BRL	1.1		ug/m3	246667	2	08/07/2017 20:12	MD
Vinyl chloride	BRL	0.51		ug/m3	246667	2	08/07/2017 20:12	MD
Surr: 4-Bromofluorobenzene	93.8	70-130		%REC	246667	2	08/07/2017 20:12	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0003-20170727
Project Name:	LC39B	**Collection Date:**	7/27/2017 4:10:00 PM
Lab ID:	1708227-003	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246667	2	08/07/2017 21:05	MD
Trichloroethene	BRL	1.1		ug/m3	246667	2	08/07/2017 21:05	MD
Vinyl chloride	BRL	0.51		ug/m3	246667	2	08/07/2017 21:05	MD
Surr: 4-Bromofluorobenzene	94.5	70-130		%REC	246667	2	08/07/2017 21:05	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0004-20170727
Project Name:	LC39B	**Collection Date:**	7/27/2017 3:45:00 PM
Lab ID:	1708227-004	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246667	2	08/07/2017 21:59	MD
Trichloroethene	BRL	1.1		ug/m3	246667	2	08/07/2017 21:59	MD
Vinyl chloride	BRL	0.51		ug/m3	246667	2	08/07/2017 21:59	MD
Surr: 4-Bromofluorobenzene	96.5	70-130		%REC	246667	2	08/07/2017 21:59	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 11-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0005-20170727
Project Name:	LC39B	**Collection Date:**	7/27/2017 3:39:00 PM
Lab ID:	1708227-005	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246667	2	08/07/2017 22:52	MD
Trichloroethene	BRL	1.1		ug/m3	246667	2	08/07/2017 22:52	MD
Vinyl chloride	BRL	0.51		ug/m3	246667	2	08/07/2017 22:52	MD
Surr: 4-Bromofluorobenzene	97.2	70-130		%REC	246667	2	08/07/2017 22:52	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample Receipt Checklist for Air Canisters

Client AEL / Geosyntec Work Order Number 1708227

Checklist completed by Mejen 8/2/17
Signature Date

Carrier name: FedEx ✓ UPS ___ Courier ___ Client ___ US Mail ___ Other ___

Shipping container in good condition?	Yes ✓ No ___ Not Present ___
Custody seals intact on shipping container?	Yes ___ No ___ Not Present ✓
Chain of custody present?	Yes ✓ No ___
Chain of custody signed when relinquished and received?	Yes ✓ No ___
Chain of custody agrees with sample labels?	Yes ✓ No ___
Field data sheets present?	Yes ✓ No ___
Sample containers intact?	Yes ✓ No ___

If no, explain: ___

All samples received within holding time?	Yes ✓ No ___
Was TAT marked on the COC?	Yes ___ No ✓
Proceed with Standard TAT as per project history?	Yes ✓ No ___ Not Applicable ___
All canisters received per Bottle Order issued?	Yes ✓ No ___

See Case Narrative for resolution of the Non-Conformance.

Client: Advanced Env Labs
Project Name: LC39B
Workorder: 1708227

ANALYTICAL QC SUMMARY REPORT

BatchID: 246667

Sample ID: **MB-246667**	Client ID:		Units: **ppbv**	Prep Date: **08/07/2017**	Run No: **349294**
SampleType: **MBLK**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **246667**	Analysis Date: **08/07/2017**	Seq No: **7675437**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	BRL	0.20									
Trichloroethene	BRL	0.20									
Vinyl chloride	BRL	0.20									
Surr: 4-Bromofluorobenzene	3.800	0	4.000		95.0	70	130				

Sample ID: **LCS-246667**	Client ID:		Units: **ppbv**	Prep Date: **08/07/2017**	Run No: **349294**
SampleType: **LCS**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **246667**	Analysis Date: **08/07/2017**	Seq No: **7675714**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	1.700	0.20	2.000		85.0	70	130				
Trichloroethene	1.900	0.20	2.000		95.0	70	130				
Vinyl chloride	1.950	0.20	2.000		97.5	70	130				
Surr: 4-Bromofluorobenzene	3.800	0	4.000		95.0	70	130				

Sample ID: **1708227-005ADUP**	Client ID: **39B-AIR0005-20170727**		Units: **ppbv**	Prep Date: **08/07/2017**	Run No: **349294**
SampleType: **DUP**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **246667**	Analysis Date: **08/08/2017**	Seq No: **7675721**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	BRL	0.20						0	0	25	
Trichloroethene	BRL	0.20						0	0	25	
Vinyl chloride	BRL	0.20						0	0	25	
Surr: 4-Bromofluorobenzene	3.790	0	4.000		94.8	70	130	3.890	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

August 17, 2017

Mike Burcham
Geosyntec Consultants
6770 S Washington Ave Ste 3
Casselberry, FL 32730

RE: Workorder: G1706759 LC39B

Dear Mike Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, August 10, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

Enclosures

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Advanced Environmental Laboratories, Inc..

Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

SAMPLE SUMMARY

Workorder: G1706759 LC39B

Lab ID	Sample ID	Matrix	Date Collected	Date Received
G1706759001	39B-AIR0001-20170803	Air	8/3/2017 16:15	8/10/2017 09:50
G1706759002	39B-AIR0002-20170803	Air	8/3/2017 16:19	8/10/2017 09:50
G1706759003	39B-AIR0003-20170803	Air	8/3/2017 16:00	8/10/2017 09:50
G1706759004	39B-AIR0004-20170803	Air	8/3/2017 16:00	8/10/2017 09:50
G1706759005	39B-AIR0005-20170803	Air	8/3/2017 16:05	8/10/2017 09:50

CERTIFICATE OF ANALYSIS

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Advanced Environmental Laboratories, Inc.
4965 SW 41st Bl Gainesville, FL 32608
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (352) 377-2349
Fax: (352) 395-6639

ANALYTICAL RESULTS QUALIFIERS

Workorder: G1706759 LC39B

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

CERTIFICATE OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Advanced Environmental Laboratories, Inc..

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

August 16, 2017

Todd Romero
Advanced Env Labs

4965 SW 41st Blvd.
Gainesville FL 32608

RE: LC39B

Dear Todd Romero: Order No: 1708886

Analytical Environmental Services, Inc. received 5 samples on 8/8/2017 11:00:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Air & Emissions for Volatile Organics effective 07/01/16-06/30/17.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Sincerely,

Tyrel Heckendorf

Project Manager

APPENDIX

Compound	CAS #	Alternate Name	TO-14A	TO-15	SOP
Acetone	67-64-1				X
Allyl chloride	107-05-1	3-Chloropropene		X	
Benzene	71-43-2		X	X	
Benzyl chloride	100-44-7		X	X	
Bromodichloromethane	75-27-4	Dichlorobromomethane			X
Bromoform	75-25-2	Tribromomethane		X	
Bromomethane	74-83-9	Methyl bromide	X	X	
1,3-Butadiene	106-99-0			X	
Carbon disulfide	75-15-0			X	
Carbon tetrachloride	56-23-5		X	X	
Chlorobenzene	108-90-7		X	X	
Chloroethane	75-00-3	Ethyl chloride	X	X	
Chloroform	67-66-3		X	X	
Chloromethane	74-87-3	Methyl chloride	X	X	
Cyclohexane	110-82-7				X
Dibromochloromethane	124-48-1	Chlorodibromomethane			X
1,2-Dibromoethane	106-93-4	EDB/Ethylene dibromide	X	X	
1,2-Dichlorobenzene	95-50-1	*o*-Dichlorobenzene	X	X	
1,3-Dichlorobenzene	541-73-1	*m*-Dichlorobenzene	X	X	
1,4-Dichlorobenzene	106-46-7	p-Dichlorobenzene	X	X	
Dichlorodifluoromethane	75-71-8	Freon-12	X		
1,1-Dichloroethane	75-34-3		X	X	
1,2-Dichloroethane	107-06-2		X	X	
1,1-Dichloroethene	75-35-4	1,1-Dichloroethylene	X	X	
cis-1,2-Dichloroethene	156-59-2	*cis*-1,2-Dichloroethylene	X	X	
trans-1,2-Dichloroethene	156-60-5	*trans*-1,2-Dichloroethylene		X	
1,2-Dichloropropane	78-87-5		X	X	
cis-1,3-Dichloropropene	10061-01-5		X	X	
trans-1,3-Dichloropropene	10061-02-6		X	X	
1,2-Dichloro-1,1,2,2-tetrafluoroethane	76-14-2	Freon-114	X		
1,4-Dioxane	123-91-1	1,4-Diethylene oxide		X	
Ethyl acetate	141-78-6	Acetic acid, ethyl ester			X
Ethylbenzene	100-41-4		X	X	
4-Ethyltoluene	622-96-8				X
n-Heptane	142-82-5	Heptane			X
Hexachlorobutadiene	87-68-3	Hexachloro-1,3-butadiene	X	X	

n-Hexane	110-54-3	Hexane		X	
Compound	**CAS #**	**Alternate Name**	**TO-14A**	**TO-15**	**SOP**
2-Hexanone	591-78-6	Methyl butyl ketone			X
Methylene chloride	75-09-2	Dichloromethane	X	X	
Methyl tert-butyl ether	1634-04-4	MTBE		X	
Methyl ethyl ketone	78-93-3	MEK/2-Butanone		X	
Methyl isobutyl ketone	108-10-1	4-Methyl-2-pentanone		X	
2-Propanol	67-63-0	Isopropanol/Isopropyl alcohol			X
Propene	115-07-1	Propylene			X
Styrene	100-42-5			X	
1,1,2,2-Tetrachloroethane	79-34-5		X	X	
Tetrachloroethene	127-18-4	Tetrachloroethylene	X	X	
Tetrahydrofuran	109-99-9				X
Toluene	108-88-3			X	
1,2,4-Trichlorobenzene	120-82-1			X	
1,1,1-Trichloroethane	74-55-6			X	
1,1,2-Trichloroethane	79-00-5			X	
Trichloroethene	79-01-6	Trichloroethylene		X	
Trichlorofluoromethane	75-69-4	Freon-11	X		
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	Freon-113	X		
1,2,4-Trimethylbenzene	95-63-6		X	X	
1,3,5-Trimethylbenzene	108-67-8		X	X	
2,2,4-Trimethylpentane	540-84-1	Isooctane		X	
Vinyl acetate	108-05-04			X	
Vinyl bromide	593-60-2	Bromoethene		X	
Vinyl chloride	75-01-4	Chloroethene	X	X	
Xylenes, Total	1330-20-7		X	X	
m/p-Xylene	179601-23-1		X	X	
o-Xylene	95-47-6		X	X	

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

VAPOR/AIR CHAIN OF CUSTODY

Work Order #: 1708886

Page 1 of 1

Company:	Address:	Bottle Order #:	Turnaround Time (Circle One):
GeoSyntec	6770 S. Washington Ave Titusville, FL 32780		Standard / 3 Day Rush / 2 Day Rush / Other
Phone: 321 2695880	Fax:		
Sampled by: D. Sizemore	Signature:		

#	Sample ID	Sample Start Date	Sample Start Time (24hr)	Sample Finish Date	Sample Finish Time (24 hr)	Sample Matrix*	Canister Serial #	Flow Controller ID	Canister Pressure In Field ("Hg) Start	Canister Pressure In Field ("Hg) Stop	ANALYSIS REQUESTED TO-15	Remarks
1	39B-AIR0001-20170803	8/3/17	9:08	8/3/17	16:15	AA	23238	1212	30	5	X	
2	39B-AIR0002-20170803		9:10		16:19	AA	17458	1210	30	4	X	
3	39B-AIR0003-20170803		9:13		16:17	AA	23238	1213	30	40	X	
4	39B-AIR0004-20170803		8:50	8/3/17	16:00	IA	23240	1217	30	4	X	
5	39B-AIR0005-20170803		9:00	8/3/17	16:05	IA	24314	1208	30	4	X	
6												
7												
8												
9												
10												

SPECIAL INSTRUCTIONS/COMMENTS:
If specialized list is required, list analytes here:

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	DATE/TIME:
1:	8/5/17	1:	8/8/17 11:20
2:		2:	
3:		3:	

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEX UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: LC39B
PROJECT #: FR1352E
SITE ADDRESS: KSC, FL
SEND REPORT TO:
INVOICE TO:
(IF DIFFERENT FROM ABOVE)
PO#:
STATE PROGRAM (if any): _____ E-mail? Y / N Fax? Y / N
QUOTE #:_____ DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR SATURDAY ARE CONSIDERED AS RECEIVED ON THE NEXT BUSINESS DAY; IF NO TAT IS MARKED ON COC, AES WILL PROCEED AS STANDARD TAT.
Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.
Samples are disposed of 30 days after collection unless prior arrangements have been made.

*SAMPLE MATRIX: IA = Indoor Air AA = Ambient Air SS = Subslab SV = Soil Vapor O = Other (specify)

AES, Inc., assumes no liability with respect to the collection and shipment of these samples.

White Copy - Original; Blue Copy - Client

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 16-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0001-20170803
Project Name:	LC39B	**Collection Date:**	8/3/2017 4:15:00 PM
Lab ID:	1708886-001	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246918	2	08/10/2017 16:42	MD
Trichloroethene	BRL	1.1		ug/m3	246918	2	08/10/2017 16:42	MD
Vinyl chloride	BRL	0.51		ug/m3	246918	2	08/10/2017 16:42	MD
Surr: 4-Bromofluorobenzene	95.5	70-130		%REC	246918	2	08/10/2017 16:42	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 16-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0002-20170803
Project Name:	LC39B	**Collection Date:**	8/3/2017 4:19:00 PM
Lab ID:	1708886-002	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246918	2	08/10/2017 17:35	MD
Trichloroethene	BRL	1.1		ug/m3	246918	2	08/10/2017 17:35	MD
Vinyl chloride	BRL	0.51		ug/m3	246918	2	08/10/2017 17:35	MD
Surr: 4-Bromofluorobenzene	95.5	70-130		%REC	246918	2	08/10/2017 17:35	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 16-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0003-20170803
Project Name:	LC39B	**Collection Date:**	8/3/2017 4:17:00 PM
Lab ID:	1708886-003	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246918	2	08/10/2017 18:29	MD
Trichloroethene	BRL	1.1		ug/m3	246918	2	08/10/2017 18:29	MD
Vinyl chloride	BRL	0.51		ug/m3	246918	2	08/10/2017 18:29	MD
Surr: 4-Bromofluorobenzene	95.5	70-130		%REC	246918	2	08/10/2017 18:29	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 16-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0004-20170803
Project Name:	LC39B	**Collection Date:**	8/3/2017 4:00:00 PM
Lab ID:	1708886-004	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246918	2	08/10/2017 19:23	MD
Trichloroethene	BRL	1.1		ug/m3	246918	2	08/10/2017 19:23	MD
Vinyl chloride	BRL	0.51		ug/m3	246918	2	08/10/2017 19:23	MD
Surr: 4-Bromofluorobenzene	95	70-130		%REC	246918	2	08/10/2017 19:23	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **TO-15 Report** **Date:** 16-Aug-17

Client:	Advanced Env Labs	**Client Sample ID:**	39B-AIR0005-20170803
Project Name:	LC39B	**Collection Date:**	8/3/2017 4:05:00 PM
Lab ID:	1708886-005	**Matrix:**	Air

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Toxic Organic Compounds in Air by GCMS TO-15				**(TO-15)**				
cis-1,2-Dichloroethene	BRL	0.79		ug/m3	246918	2	08/10/2017 20:17	MD
Trichloroethene	BRL	1.1		ug/m3	246918	2	08/10/2017 20:17	MD
Vinyl chloride	BRL	0.51		ug/m3	246918	2	08/10/2017 20:17	MD
Surr: 4-Bromofluorobenzene	96.2	70-130		%REC	246918	2	08/10/2017 20:17	MD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample Receipt Checklist for Air Canisters

Client Advanced Env Labs/GA Work Order Number 1708886

Checklist completed by [signature] 8/9/17
Signature Date

Carrier name: FedEx ✓ UPS___ Courier___ Client___ US Mail___ Other___

Shipping container in good condition?	Yes ✓	No___	Not Present___
Custody seals intact on shipping container?	Yes___	No___	Not Present ✓
Chain of custody present?	Yes ✓	No___	
Chain of custody signed when relinquished and received?	Yes ✓	No___	
Chain of custody agrees with sample labels?	Yes ✓	No___	
Field data sheets present?	Yes___	No ✓	
Sample containers intact?	Yes ✓	No___	

If no, explain: _____

All samples received within holding time?	Yes ✓	No___	
Was TAT marked on the COC?	Yes ✓	No___	
Proceed with Standard TAT as per project history?	Yes___	No___	Not Applicable ✓
All canisters received per Bottle Order issued?	Yes ✓	No___	

See Case Narrative for resolution of the Non-Conformance.

Client: Advanced Env Labs
Project Name: LC39B
Workorder: 1708886

ANALYTICAL QC SUMMARY REPORT

BatchID: 246918

Sample ID: **MB-246918**	Client ID:		Units: **ppbv**	Prep Date: **08/10/2017**	Run No: **349701**
SampleType: **MBLK**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **246918**	Analysis Date: **08/10/2017**	Seq No: **7684545**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	BRL	0.10									
Trichloroethene	BRL	0.10									
Vinyl chloride	BRL	0.10									
Surr: 4-Bromofluorobenzene	1.885	0	2.000		94.2	70	130				

Sample ID: **LCS-246918**	Client ID:		Units: **ppbv**	Prep Date: **08/10/2017**	Run No: **349701**
SampleType: **LCS**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **246918**	Analysis Date: **08/10/2017**	Seq No: **7684547**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	1.770	0.20	2.000		88.5	70	130				
Trichloroethene	1.990	0.20	2.000		99.5	70	130				
Vinyl chloride	2.250	0.20	2.000		112	70	130				
Surr: 4-Bromofluorobenzene	3.830	0	4.000		95.8	70	130				

Sample ID: **1708886-004ADUP**	Client ID: **39B-AIR0004-20170803**		Units: **ppbv**	Prep Date: **08/10/2017**	Run No: **349788**
SampleType: **DUP**	TestCode: **Toxic Organic Compounds in Air by GCMS TO-15**		BatchID: **246918**	Analysis Date: **08/11/2017**	Seq No: **7686493**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
cis-1,2-Dichloroethene	BRL	0.20						0	0	25	
Trichloroethene	BRL	0.20						0	0	25	
Vinyl chloride	BRL	0.20						0	0	25	
Surr: 4-Bromofluorobenzene	3.750	0	4.000		93.8	70	130	3.800	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

JUNE THROUGH AUGUST 2017
VENTILATION TUNNEL WATER SAMPLING

LABORATORY ANALYTICAL RESULTS

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
6681 Southpoint Pkwy Jacksonville, FL 32216
Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (904)363-9350
Fax: (904)363-9354

July 13, 2017

Mike Burcham
Geosyntec Consultants
11490Westheimer Suite 150
Houston, TX 77077

RE: Workorder: J1706421 LC39B Tunnel

Dear Mike Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, June 27, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

Enclosures

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Phone: (904)363-9350
Fax: (904)363-9354

SAMPLE SUMMARY

Workorder: J1706421 LC39B Tunnel

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J1706421001	39B-TU0001-000.0-20170621	Water	6/21/2017 16:32	6/27/2017 08:00
J1706421002	39B-TU0002-000.0-20170621	Water	6/21/2017 16:36	6/27/2017 08:00

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ANALYTICAL RESULTS

Workorder: J1706421 LC39B Tunnel

Lab ID: **J1706421001** Date Received: 06/27/17 08:00 Matrix: Water
Sample ID: **39B-TU0001-000.0-20170621** Date Collected: 06/21/17 16:32

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	6/28/2017 04:30	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	6/28/2017 04:30	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	6/28/2017 04:30	J
1,2-Dichloroethane-d4 (S)	**101**		**%**	**1**	70-128		6/28/2017 04:30	
Toluene-d8 (S)	**95**		**%**	**1**	77-119		6/28/2017 04:30	
Bromofluorobenzene (S)	**109**		**%**	**1**	86-123		6/28/2017 04:30	

Lab ID: **J1706421002** Date Received: 06/27/17 08:00 Matrix: Water
Sample ID: **39B-TU0002-000.0-20170621** Date Collected: 06/21/17 16:36

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	6/28/2017 04:59	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	6/28/2017 04:59	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	6/28/2017 04:59	J
1,2-Dichloroethane-d4 (S)	**105**		**%**	**1**	70-128		6/28/2017 04:59	
Toluene-d8 (S)	**100**		**%**	**1**	77-119		6/28/2017 04:59	
Bromofluorobenzene (S)	**109**		**%**	**1**	86-123		6/28/2017 04:59	

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ANALYTICAL RESULTS QUALIFIERS

Workorder: J1706421 LC39B Tunnel

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

J	DOH Certification #E82574(AEL-JAX)(FL NELAC Certification)

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QUALITY CONTROL DATA

Workorder: J1706421 LC39B Tunnel

QC Batch: MSVj/4285 Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030B Prepared: 06/27/2017 10:52

Associated Lab Samples: J1706421001, J1706421002

METHOD BLANK: 2392151

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Vinyl Chloride	ug/L	0.20	0.20	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Trichloroethene	ug/L	0.29	0.29	U
1,2-Dichloroethane-d4 (S)	%	97	70-128	
Toluene-d8 (S)	%	99	77-119	
Bromofluorobenzene (S)	%	107	86-123	

LABORATORY CONTROL SAMPLE & LCSD: 2392152 2392153

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
VOLATILES										
Vinyl Chloride	ug/L	20	20	17	98	87	70-130	12	30	
cis-1,2-Dichloroethylene	ug/L	20	20	18	101	92	70-130	8	30	
Trichloroethene	ug/L	20	20	18	99	91	70-130	8	30	
1,2-Dichloroethane-d4 (S)	%				102	102	70-128	0		
Toluene-d8 (S)	%				101	102	77-119	2		
Bromofluorobenzene (S)	%				102	105	86-123	3		

MATRIX SPIKE SAMPLE: 2392154 Original: J1706421001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
VOLATILES							
Vinyl Chloride	ug/L	0	20	17	85	70-130	
cis-1,2-Dichloroethylene	ug/L	0	20	18	89	70-130	
Trichloroethene	ug/L	0	20	17	86	70-130	
1,2-Dichloroethane-d4 (S)	%	101			106	70-128	
Toluene-d8 (S)	%	95			102	77-119	
Bromofluorobenzene (S)	%	109			107	86-123	

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J1706421 LC39B Tunnel

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J1706421001	39B-TU0001-000.0-20170621	SW-846 5030B	MSVj/4285	SW-846 8260B	MSVj/4286
J1706421002	39B-TU0002-000.0-20170621	SW-846 5030B	MSVj/4285	SW-846 8260B	MSVj/4286

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☐ **Jacksonville:** 6681 Southpoint Pkwy. • Jacksonville, FL 322
☐ **Miramar:** 10200 USA Today Way • Miramar, FL 33025 • 954.
☐ **Tallahassee:** 2639 North Monroe Street, Suite D • Tallahass
☐ **Tampa:** 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.6

J1706421

Client Name: GeoSyntec	Project Name: 2C39B Tunnel		
Address: 6770 S. Washington Ave Ste. 3, Titusville FL	P.O. Number or Project Number: PR1352E		
Phone: 321-795-1303	FDEP Facility No:		
FAX:	Project Address:		
Contact: Rebecca Dapratto	Special Instructions: RDapratto@Geosyntec.com Profile 31280		
Sampled By: Ben Coppenger			
Turn Around Time: ☒ STANDARD ☐ RUSH			
Page: 1 of 1	☒ ADaPT ☐ EQuIS ☐ Other		

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	PRESERVATION	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: TCE, cDCE, VC 8260B	LABORATORY I.D. NUMBER
	39B-Tunnel-0680-20170621	G	6/21/17	1632	GW	3			X	001
	39B-Tunnel-0955-20170621	G	6/21/17	1636	GW	3			X	002

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge **Preservation Code:** I = Ice H=(HCl) S = (H_2SO_4) N = (HNO_3) T = (Sodium Thiosulfate)

Received on Ice ☒ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 04/30/2015 Device used for measuring Temp by unique identifier (circle IR temp gun used) 1-9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1				Tim Ball	6/26/17	2:15
2	Bluestreak	10-27-17	8:00	Bob Ault	10-27-17	8:00
3						
4						

FOR DRINKING WATER USE:

PWS ID:

Contact Person: Phone:

Supplier of Water:

Site-Address:

Thursday, July 13, 2017 10:44:11 AM

Advanced Environmental Laboratories, Inc.

Advanced Environmental Laboratories, Inc
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Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (904)363-9350
Fax: (904)363-9354

July 12, 2017

Mike Burcham
Geosyntec Consultants
11490Westheimer Suite 150
Houston, TX 77077

RE: Workorder: J1706788 NASA KSC 39B Tunnel

Dear Mike Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Saturday, July 08, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

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Fax: (904)363-9354

SAMPLE SUMMARY

Workorder: J1706788 NASA KSC 39B Tunnel

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J1706788001	39B-TU0001-000.0-20170706	Water	7/6/2017 16:47	7/8/2017 10:00
J1706788002	39B-TU0003-000.0-20170706	Water	7/6/2017 16:54	7/8/2017 10:00

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ACCREDITED IN ACCORDANCE WITH nelac

3004.1.0.0

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Fax: (904)363-9354

ANALYTICAL RESULTS

Workorder: J1706788 NASA KSC 39B Tunnel

Lab ID: **J1706788001** Date Received: 07/08/17 10:00 Matrix: Water
Sample ID: **39B-TU0001-000.0-20170706** Date Collected: 07/06/17 16:47

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	7/10/2017 20:01	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	7/10/2017 20:01	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	7/10/2017 20:01	J
1,2-Dichloroethane-d4 (S)	**107**		**%**	**1**	70-128		7/10/2017 20:01	
Toluene-d8 (S)	**92**		**%**	**1**	77-119		7/10/2017 20:01	
Bromofluorobenzene (S)	**111**		**%**	**1**	86-123		7/10/2017 20:01	

Lab ID: **J1706788002** Date Received: 07/08/17 10:00 Matrix: Water
Sample ID: **39B-TU0003-000.0-20170706** Date Collected: 07/06/17 16:54

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	7/10/2017 20:27	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	7/10/2017 20:27	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	7/10/2017 20:27	J
1,2-Dichloroethane-d4 (S)	**106**		**%**	**1**	70-128		7/10/2017 20:27	
Toluene-d8 (S)	**94**		**%**	**1**	77-119		7/10/2017 20:27	
Bromofluorobenzene (S)	**114**		**%**	**1**	86-123		7/10/2017 20:27	

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Fax: (904)363-9354

ANALYTICAL RESULTS QUALIFIERS

Workorder: J1706788 NASA KSC 39B Tunnel

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

J	DOH Certification #E82574(AEL-JAX)(FL NELAC Certification)

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QUALITY CONTROL DATA

Workorder: J1706788 NASA KSC 39B Tunnel

QC Batch: MSVj/4356 Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030B Prepared: 07/10/2017 08:54

Associated Lab Samples: J1706788001

METHOD BLANK: 2402867

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Vinyl Chloride	ug/L	0.20	0.20	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Trichloroethene	ug/L	0.29	0.29	U
1,2-Dichloroethane-d4 (S)	%	105	70-128	
Toluene-d8 (S)	%	95	77-119	
Bromofluorobenzene (S)	%	111	86-123	

LABORATORY CONTROL SAMPLE & LCSD: 2402868 2402869

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
VOLATILES										
Vinyl Chloride	ug/L	20	15	18	75	89	70-130	17	30	
cis-1,2-Dichloroethylene	ug/L	20	20	18	98	88	70-130	11	30	
Trichloroethene	ug/L	20	20	18	102	91	70-130	11	30	
1,2-Dichloroethane-d4 (S)	%				97	97	70-128	1		
Toluene-d8 (S)	%				98	99	77-119	1		
Bromofluorobenzene (S)	%				100	101	86-123	1		

MATRIX SPIKE SAMPLE: 2402870 Original: J1706782002

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
VOLATILES							
Vinyl Chloride	ug/L	3300	1000	4100	79	70-130	
cis-1,2-Dichloroethylene	ug/L	2500	1000	3600	106	70-130	
Trichloroethene	ug/L	0	1000	960	96	70-130	
1,2-Dichloroethane-d4 (S)	%				100	70-128	
Toluene-d8 (S)	%				95	77-119	
Bromofluorobenzene (S)	%				100	86-123	

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QUALITY CONTROL DATA

Workorder: J1706788 NASA KSC 39B Tunnel

QC Batch: MSVj/4363
QC Batch Method: SW-846 5030B
Associated Lab Samples: J1706788002

Analysis Method: SW-846 8260B
Prepared: 07/10/2017 08:54

METHOD BLANK: 2402958

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Vinyl Chloride	ug/L	0.20	0.20	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Trichloroethene	ug/L	0.29	0.29	U
1,2-Dichloroethane-d4 (S)	%	105	70-128	
Toluene-d8 (S)	%	95	77-119	
Bromofluorobenzene (S)	%	111	86-123	

LABORATORY CONTROL SAMPLE & LCSD: 2402959 2402960

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
VOLATILES										
Vinyl Chloride	ug/L	20	18	22	89	110	70-130	20	30	
cis-1,2-Dichloroethylene	ug/L	20	18	22	88	109	70-130	21	30	
Trichloroethene	ug/L	20	18	22	91	108	70-130	18	30	
1,2-Dichloroethane-d4 (S)	%				97	107	70-128	10		
Toluene-d8 (S)	%				99	97	77-119	2		
Bromofluorobenzene (S)	%				101	104	86-123	3		

MATRIX SPIKE SAMPLE: 2402961 Original: J1706836001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
VOLATILES							
Vinyl Chloride	ug/L	0	20	19	94	70-130	
cis-1,2-Dichloroethylene	ug/L	0	20	19	96	70-130	
Trichloroethene	ug/L	0	20	19	94	70-130	
1,2-Dichloroethane-d4 (S)	%	104			100	70-128	
Toluene-d8 (S)	%	96			98	77-119	
Bromofluorobenzene (S)	%	112			107	86-123	

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J1706788 NASA KSC 39B Tunnel

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J1706788001	39B-TU0001-000.0-20170706	SW-846 5030B	MSVj/4356	SW-846 8260B	MSVj/4357
J1706788002	39B-TU0003-000.0-20170706	SW-846 5030B	MSVj/4363	SW-846 8260B	MSVj/4364

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☐ **Miramar:** 10200 USA Today Way, Miramar, FL 33025 • 954.889.22
☐ **Tallahassee:** 1288 Cedar Center Drive, Tallahassee, FL 32301 •
☐ **Tampa:** 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.961

J1706788

Client Name: **Geosyntec Consultants**	Project Name: **NASA KSC 39B Tunnel**
Address: **6770 South Washington Ave, Suite 3**	P.O. Number/Project Number: **FR1352E**
Titusville, FL 32780	Project Location:
Phone: **321.269.5880**	FDEP Facility No:
FAX	Project Name and Address:
Contact: **Mike Burcham**	**GNV Profile: 31280**
Sampled By:	
Turn Around Time: ☒ STANDARD ☐ RUSH	Special Instructions:
Page 1 of 1	☐ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: VOC VC,c12DCE,TCE Only (82560B)	LABORATORY I.D. NUMBER
							Preservation	HCl	
							Field-Filtered?	N	
	39B-TUNNEL0001-20170706	Grab	7/6/17	1647	SW			X	001
	39B-Tunnel0002-20170706	Grab	7/6/17	1651	SW			X	002

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☒ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1		7/7/17	0840		7/7/17	2:21
2	Bluestreak	7/8/17	10:00	T. Heal	7/8/17	10:00
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID:

Contact Person: Phone :

Supplier of Water:

Site-Address:

Wednesday, July 12, 2017 4:49:22 PM

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July 24, 2017

Mike Burcham
Geosyntec Consultants
11490Westheimer Suite 150
Houston, TX 77077

RE: Workorder: J1707081 NASA KSC 39B Tunnel

Dear Mike Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Saturday, July 15, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Todd Romero
TRomero@AELLab.com

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SAMPLE SUMMARY

Workorder: J1707081 NASA KSC 39B Tunnel

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J1707081001	39B-TU0005-000.0-20170713	Water	7/13/2017 15:35	7/15/2017 10:00
J1707081002	39B-TU0004-000.0-20170713	Water	7/13/2017 15:40	7/15/2017 10:00

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ANALYTICAL RESULTS

Workorder: J1707081 NASA KSC 39B Tunnel

Lab ID: **J1707081001** Date Received: 07/15/17 10:00 Matrix: Water
Sample ID: **39B-TU0005-000.0-20170713** Date Collected: 07/13/17 15:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	7/22/2017 11:42	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	7/22/2017 11:42	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	7/22/2017 11:42	J
1,2-Dichloroethane-d4 (S)	**88**		**%**	**1**	70-128		7/22/2017 11:42	
Toluene-d8 (S)	**90**		**%**	**1**	77-119		7/22/2017 11:42	
Bromofluorobenzene (S)	**111**		**%**	**1**	86-123		7/22/2017 11:42	

Lab ID: **J1707081002** Date Received: 07/15/17 10:00 Matrix: Water
Sample ID: **39B-TU0004-000.0-20170713** Date Collected: 07/13/17 15:40

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	7/22/2017 12:08	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	7/22/2017 12:08	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	7/22/2017 12:08	J
1,2-Dichloroethane-d4 (S)	**85**		**%**	**1**	70-128		7/22/2017 12:08	
Toluene-d8 (S)	**90**		**%**	**1**	77-119		7/22/2017 12:08	
Bromofluorobenzene (S)	**113**		**%**	**1**	86-123		7/22/2017 12:08	

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ANALYTICAL RESULTS QUALIFIERS

Workorder: J1707081 NASA KSC 39B Tunnel

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

J	DOH Certification #E82574(AEL-JAX)(FL NELAC Certification)

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QUALITY CONTROL DATA

Workorder: J1707081 NASA KSC 39B Tunnel

QC Batch: MSVj/4422 Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030B Prepared: 07/21/2017 11:06

Associated Lab Samples: J1707081001, J1707081002

METHOD BLANK: 2415489

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Vinyl Chloride	ug/L	0.20	0.20	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Trichloroethene	ug/L	0.29	0.29	U
1,2-Dichloroethane-d4 (S)	%	90	70-128	
Toluene-d8 (S)	%	95	77-119	
Bromofluorobenzene (S)	%	111	86-123	

LABORATORY CONTROL SAMPLE & LCSD: 2415490 2415491

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
VOLATILES										
Vinyl Chloride	ug/L	20	18	21	91	106	70-130	16	30	
cis-1,2-Dichloroethylene	ug/L	20	19	20	93	102	70-130	10	30	
Trichloroethene	ug/L	20	20	19	100	97	70-130	3	30	
1,2-Dichloroethane-d4 (S)	%				96	82	70-128	16		
Toluene-d8 (S)	%				98	97	77-119	1		
Bromofluorobenzene (S)	%				98	102	86-123	4		

MATRIX SPIKE SAMPLE: 2415492 Original: J1707141007

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
VOLATILES							
Vinyl Chloride	ug/L	0	20	19	94	70-130	
cis-1,2-Dichloroethylene	ug/L	0	20	18	88	70-130	
Trichloroethene	ug/L	0	20	18	91	70-130	
1,2-Dichloroethane-d4 (S)	%				82	70-128	
Toluene-d8 (S)	%				96	77-119	
Bromofluorobenzene (S)	%				102	86-123	

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J1707081 NASA KSC 39B Tunnel

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J1707081001	39B-TU0005-000.0-20170713	SW-846 5030B	MSVj/4422	SW-846 8260B	MSVj/4423
J1707081002	39B-TU0004-000.0-20170713	SW-846 5030B	MSVj/4422	SW-846 8260B	MSVj/4423

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☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.9616 • Fax 813.630.4327

J1707081

Client Name:	Geosyntec Consultants
Address:	6770 South Washington Ave, Suite 3
	Titusville, FL 32780
Phone:	321.269.5880
FAX:	
Contact:	321-960-9789 Mike Burcham
Sampled By:	Ben Coppenger
Turn Around Time:	☐ STANDARD ☐ RUSH
Page	1 of 1

Project Name: NASA KSC 39B Tunnel
P.O. Number/Project Number: FR1352E
Project Location:
FDEP Facility No:
Project Name and Address:

GNV Profile: 31280

Special Instructions:
☐ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: VOC VC,c12DCE,TCE Only (82560B)	LABORATORY I.D. NUMBER
							Preservation		
							Field-Filtered?		
	39B-TU0723-000.0-20170713	G	7/13	1535	GW	3		X	001
	39B-TU0906-000.0-20170713	G	7/13	1540	GW	3		X	002

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☒ Yes ☐ No ☒ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015

Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1		7/14/17	12:00			
2					7/14/17	12
3	Bluestreak	7/15/17	10:00	T. Heal	7/15/17	10:00
4						

FOR DRINKING WATER USE:
(When PWS Information not otherwise supplied) PWS ID:
Contact Person: Phone :
Supplier of Water:
Site-Address:

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August 9, 2017

Mike Burcham
Geosyntec Consultants
11490Westheimer Suite 150
Houston, TX 77077

RE: Workorder: J1707583 NASA KSC 39B Tunnel

Dear Mike Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Saturday, July 29, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

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SAMPLE SUMMARY

Workorder: J1707583 NASA KSC 39B Tunnel

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J1707583001	39B-TU0005-00.0-20170727	Water	7/27/2017 16:30	7/29/2017 09:35
J1707583002	39B-TU0004-00.0-20170727	Water	7/27/2017 16:35	7/29/2017 09:35

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ANALYTICAL RESULTS

Workorder: J1707583 NASA KSC 39B Tunnel

Lab ID: **J1707583001** Date Received: 07/29/17 09:35 Matrix: Water
Sample ID: **39B-TU0005-00.0-20170727** Date Collected: 07/27/17 16:30

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	7/31/2017 12:31	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	7/31/2017 12:31	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	7/31/2017 12:31	J
1,2-Dichloroethane-d4 (S)	**93**		**%**	**1**	70-128		7/31/2017 12:31	
Toluene-d8 (S)	**101**		**%**	**1**	77-119		7/31/2017 12:31	
Bromofluorobenzene (S)	**116**		**%**	**1**	86-123		7/31/2017 12:31	

Lab ID: **J1707583002** Date Received: 07/29/17 09:35 Matrix: Water
Sample ID: **39B-TU0004-00.0-20170727** Date Collected: 07/27/17 16:35

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	7/31/2017 13:02	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	7/31/2017 13:02	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	7/31/2017 13:02	J
1,2-Dichloroethane-d4 (S)	**91**		**%**	**1**	70-128		7/31/2017 13:02	
Toluene-d8 (S)	**103**		**%**	**1**	77-119		7/31/2017 13:02	
Bromofluorobenzene (S)	**115**		**%**	**1**	86-123		7/31/2017 13:02	

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ANALYTICAL RESULTS QUALIFIERS

Workorder: J1707583 NASA KSC 39B Tunnel

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

J	DOH Certification #E82574(AEL-JAX)(FL NELAC Certification)

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QUALITY CONTROL DATA

Workorder: J1707583 NASA KSC 39B Tunnel

QC Batch: MSVj/4493 Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030B Prepared: 07/31/2017 09:00

Associated Lab Samples: J1707583001, J1707583002

METHOD BLANK: 2422744

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Vinyl Chloride	ug/L	0.20	0.20	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Trichloroethene	ug/L	0.29	0.29	U
1,2-Dichloroethane-d4 (S)	%	94	70-128	
Toluene-d8 (S)	%	102	77-119	
Bromofluorobenzene (S)	%	120	86-123	

LABORATORY CONTROL SAMPLE & LCSD: 2422745 2422746

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
VOLATILES										
Vinyl Chloride	ug/L	20	18	18	88	88	70-130	0	30	
cis-1,2-Dichloroethylene	ug/L	20	20	20	102	100	70-130	2	30	
Trichloroethene	ug/L	20	20	20	102	99	70-130	2	30	
1,2-Dichloroethane-d4 (S)	%				96	89	70-128	8		
Toluene-d8 (S)	%				107	108	77-119	0		
Bromofluorobenzene (S)	%				104	104	86-123	0		

MATRIX SPIKE SAMPLE: 2422747 Original: J1707583001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
VOLATILES							
Vinyl Chloride	ug/L	0	20	14	72	70-130	
cis-1,2-Dichloroethylene	ug/L	0	20	17	84	70-130	
Trichloroethene	ug/L	0	20	17	85	70-130	
1,2-Dichloroethane-d4 (S)	%	93			96	70-128	
Toluene-d8 (S)	%	101			105	77-119	
Bromofluorobenzene (S)	%	116			100	86-123	

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Advanced Environmental Laboratories, Inc
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Payments: P .O. Box 551580 Jacksonville, FL 32255-1580
Phone: (904)363-9350
Fax: (904)363-9354

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J1707583 NASA KSC 39B Tunnel

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J1707583001	39B-TU0005-00.0-20170727	SW-846 5030B	MSVj/4493	SW-846 8260B	MSVj/4494
J1707583002	39B-TU0004-00.0-20170727	SW-846 5030B	MSVj/4493	SW-846 8260B	MSVj/4494

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☐ Jacksonville: 6681 Southpoint Pkwy. • Jacksonville, FL 32216 • (
☐ Miramar: 10200 USA Today Way, Miramar, FL 33025 • 954.889.2
☐ Tallahassee: 1288 Cedar Center Drive, Tallahassee, FL 32301 •
☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.961[illegible] • Fax [illegible]

J1707583

Client Name:	Geosyntec Consultants
Address:	6770 South Washington Ave, Suite 3
	Titusville, FL 32780
Phone:	321.269.5880
FAX:	
Contact:	Mike Burcham
Sampled By:	D. Sizemore
Turn Around Time:	☐ STANDARD ☐ RUSH
Page	1 of 1

Project Name:	NASA KSC 39B Tunnel
P.O. Number/Project Number:	FR1352E
Project Location:	KSC, Fl
FDEP Facility No:	
Project Name and Address:	
	GNV Profile: 31280
Special Instructions:	☐ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: VOC VC,c12DCE,TCE Only (82560B)	LABORATORY I.D. NUMBER
							Preservation		
							Field-Filtered?		
39B-0006	-723.0-20170727	G	7/27/17	1630	GW	3		X	001
39B-0007	-905.0-20170727	G	↓	1635	GW	↓		X	002

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☑ Yes ☐ No ☑ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received 4 (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015

Device used for measuring Temp by unique identifier (circle IR temp gun used) (J: 9A) G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1					7-28	3:11
2	Blue Streak				7.29.17	0855
3						
4						

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID: _____

Contact Person: _____ Phone: _____

Supplier of Water: _____

Site-Address: _____

Wednesday, August 09, 2017 8:50:09 AM

Advanced Environmental Laboratories, Inc.

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Fax: (904)363-9354

August 9, 2017

Mike Burcham
Geosyntec Consultants
11490Westheimer Suite 150
Houston, TX 77077

RE: Workorder: J1707818 NASA KSC 39B Tunnel

Dear Mike Burcham:

Enclosed are the analytical results for sample(s) received by the laboratory on Saturday, August 05, 2017. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report. The analytical results for the samples contained in this report were submitted for analysis as outlined by the Chain of Custody and results pertain only to these samples.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Todd Romero
TRomero@AELLab.com

Enclosures

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SAMPLE SUMMARY

Workorder: J1707818 NASA KSC 39B Tunnel

Lab ID	Sample ID	Matrix	Date Collected	Date Received
J1707818001	39B-TU0005-00.0-20170803	Water	8/3/2017 09:15	8/5/2017 09:00
J1707818002	39B-TU0004-00.0-20170803	Water	8/3/2017 09:20	8/5/2017 09:00

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ANALYTICAL RESULTS

Workorder: J1707818 NASA KSC 39B Tunnel

Lab ID: **J1707818001** Date Received: 08/05/17 09:00 Matrix: Water
Sample ID: **39B-TU0005-00.0-20170803** Date Collected: 08/03/17 09:15

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	8/7/2017 15:00	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	8/7/2017 15:00	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	8/7/2017 15:00	J
1,2-Dichloroethane-d4 (S)	**83**		**%**	**1**	70-128		8/7/2017 15:00	
Toluene-d8 (S)	**96**		**%**	**1**	77-119		8/7/2017 15:00	
Bromofluorobenzene (S)	**120**		**%**	**1**	86-123		8/7/2017 15:00	

Lab ID: **J1707818002** Date Received: 08/05/17 09:00 Matrix: Water
Sample ID: **39B-TU0004-00.0-20170803** Date Collected: 08/03/17 09:20

Sample Description: Location:

Parameters	Results	Qual	Units	DF	Adjusted PQL	Adjusted MDL	Analyzed	Lab
VOLATILES								
Analysis Desc: 8260B Analysis, Water	Preparation Method: SW-846 5030B Analytical Method: SW-846 8260B							
Trichloroethene	**0.29**	**U**	**ug/L**	**1**	1.0	0.29	8/7/2017 15:29	J
Vinyl Chloride	**0.20**	**U**	**ug/L**	**1**	1.0	0.20	8/7/2017 15:29	J
cis-1,2-Dichloroethylene	**0.24**	**U**	**ug/L**	**1**	1.0	0.24	8/7/2017 15:29	J
1,2-Dichloroethane-d4 (S)	**84**		**%**	**1**	70-128		8/7/2017 15:29	
Toluene-d8 (S)	**95**		**%**	**1**	77-119		8/7/2017 15:29	
Bromofluorobenzene (S)	**122**		**%**	**1**	86-123		8/7/2017 15:29	

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ANALYTICAL RESULTS QUALIFIERS

Workorder: J1707818 NASA KSC 39B Tunnel

PARAMETER QUALIFIERS

U	The compound was analyzed for but not detected.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

LAB QUALIFIERS

J	DOH Certification #E82574(AEL-JAX)(FL NELAC Certification)

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QUALITY CONTROL DATA

Workorder: J1707818 NASA KSC 39B Tunnel

QC Batch: MSVj/4537 Analysis Method: SW-846 8260B

QC Batch Method: SW-846 5030B Prepared: 08/07/2017 09:13

Associated Lab Samples: J1707818001, J1707818002

METHOD BLANK: 2429140

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
VOLATILES				
Vinyl Chloride	ug/L	0.20	0.20	U
cis-1,2-Dichloroethylene	ug/L	0.24	0.24	U
Trichloroethene	ug/L	0.29	0.29	U
1,2-Dichloroethane-d4 (S)	%	89	70-128	
Toluene-d8 (S)	%	97	77-119	
Bromofluorobenzene (S)	%	120	86-123	

LABORATORY CONTROL SAMPLE & LCSD: 2429141 2429142

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
VOLATILES										
Vinyl Chloride	ug/L	20	20	20	103	103	70-130	0	30	
cis-1,2-Dichloroethylene	ug/L	20	22	23	109	113	70-130	3	30	
Trichloroethene	ug/L	20	21	21	107	103	70-130	4	30	
1,2-Dichloroethane-d4 (S)	%				90	80	70-128	12		
Toluene-d8 (S)	%				103	105	77-119	2		
Bromofluorobenzene (S)	%				103	102	86-123	1		

MATRIX SPIKE SAMPLE: 2429143 Original: J1707818001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
VOLATILES							
Vinyl Chloride	ug/L	0	20	7.5	37	70-130	
cis-1,2-Dichloroethylene	ug/L	0	20	19	96	70-130	
Trichloroethene	ug/L	0	20	19	95	70-130	
1,2-Dichloroethane-d4 (S)	%	83			85	70-128	
Toluene-d8 (S)	%	96			105	77-119	
Bromofluorobenzene (S)	%	120			102	86-123	

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Fax: (904)363-9354

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: J1707818 NASA KSC 39B Tunnel

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
J1707818001	39B-TU0005-00.0-20170803	SW-846 5030B	MSVj/4537	SW-846 8260B	MSVj/4538
J1707818002	39B-TU0004-00.0-20170803	SW-846 5030B	MSVj/4537	SW-846 8260B	MSVj/4538

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☐ Tallahassee: 1288 Cedar Center Drive, Tallahassee, FL 32301 •
☐ Tampa: 9610 Princess Palm Ave. • Tampa, FL 33619 • 813.630.96

J1707818

Client Name:	Geosyntec Consultants
Address:	6770 South Washington Ave, Suite 3
	Titusville, FL 32780
Phone:	321.269.5880
FAX:	
Contact:	Mike Burcham
Sampled By:	D. Sizemore
Turn Around Time:	☑ STANDARD ☐ RUSH
Page	1 of 1

Project Name:	NASA KSC 39B Tunnel
P.O. Number/Project Number:	FR1352E
Project Location:	KSC, Fl
FDEP Facility No	
Project Name and Address:	
	GNV Profile: 31280
Special Instructions:	☐ ADaPT ☐ EQuIS ☐ Other

SAMPLE ID	SAMPLE DESCRIPTION	Grab Comp	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. COUNT	BOTTLE SIZE & TYPE	ANALYSIS REQUIRED: VOC VC,c12DCE,TCE Only (82560B)	LABORATORY I.D. NUMBER
							Preservation		
							Field-Filtered?		
39B-0006-723.0-20170727		G	~~8/7/17~~ 8/3/17	~~1630~~ 0915	GW	3		X	001
39B-0007-905.0-20170727		G	8/3/17	1535	GW	3		X	002
OW 8/7/17			8/3/17						
				Sampled @ 0915 & 0920 respectively					
					OW 8/7/17				

Matrix Code: WW = wastewater SW = surface water GW = ground water DW = drinking water O = oil A = air SO = soil SL = sludge

Preservation Code: I = Ice H=(HCl) S = (H2SO4) N = (HNO3) T = (Sodium Thiosulfate)

Received on Ice ☐ Yes ☐ No ☐ Temp taken from sample ☐ Temp from blank ☐ Where required, pH checked Temperature when received _____ (in degrees celcius)

DCN: AD-051 Form last revised 10/15/2015 Device used for measuring Temp by unique identifier (circle IR temp gun used) J: 9A G: LT-1 LT-2 T: 10A A: 3A M: 3A S: 1V

	Relinquished by:	Date	Time	Received by:	Date	Time
1					7-28	3:11
2		8/4/17		KeN DeTOWOS	8-4-17	08:33
3		8-4-17	18:30	Bluestreak		
4	Bluestreak	8-5-17	0900		8-5-17	0900

FOR DRINKING WATER USE:

(When PWS Information not otherwise supplied) PWS ID: _____

Contact Person: _____ Phone: _____

Supplier of Water: _____

Site-Address: _____

Wednesday, August 09, 2017 8:45:41 AM

APPENDIX E
RIS COMPLETION TICKETS
(FURNISHED ON CD)

DATA CHECKER

Completion Ticket

On 2/24/2017 at 9:14 AM the following files were submitted to TtNUS

Completion_GSTTI_39B_20170224.txt

Lithology_GSTTI_39B_20170224.txt

Location_GSTTI_39B_20170224.txt

Project_GSTTI_39B_20170224.txt

Result_GSTTI_39B_20170224.txt

Sample_GSTTI_39B_20170224.txt

Water_GSTTI_39B_20170224.txt

The following comment was provided with this submission:
NOV 2016 MW

If you need to identify this session at a later date you may use the Ticket Key:

Repository2017224_2645874633_kedd_GSTTI

You may print this page by clicking on the "Print This Page" button

Thank you for using the Data Checker, to upload more files click the "Upload Files" link in the menu.

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DATA CHECKER

Completion Ticket

On 3/22/2017 at 9:27 AM the following files were submitted to TtNUS

Completion_GSTTI_39B_20170322.txt

Lithology_GSTTI_39B_20170322.txt

Location_GSTTI_39B_20170322.txt

Project_GSTTI_39B_20170322.txt

Result_GSTTI_39B_20170322.txt

Sample_GSTTI_39B_20170322.txt

Water_GSTTI_39B_20170322.txt

The following comment was provided with this submission:
IDW JAN 2017

If you need to identify this session at a later date you may use the Ticket Key:

Repository2017322_564311294_kedd_GSTTI

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DATA CHECKER

Completion Ticket

On 8/4/2017 at 10:16 AM the following files were submitted to TtNUS

Completion_GSTTI_39B_20170804.txt

Lithology_GSTTI_39B_20170804.txt

Location_GSTTI_39B_20170804.txt

Project_GSTTI_39B_20170804.txt

Result_GSTTI_39B_20170804.txt

Sample_GSTTI_39B_20170804.txt

Water_GSTTI_39B_20170804.txt

The following comment was provided with this submission:
ASW IDW March 2017

If you need to identify this session at a later date you may use the Ticket Key:

Repository201784_4191188439_kedd_GSTTI

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Data Checker

Completion Ticket

On 9/6/2017 at 9:08 AM the following files were submitted to TtNUS

Completion_GSTTI_39B_20170906.txt

Lithology_GSTTI_39B_20170906.txt

Location_GSTTI_39B_20170906.txt

Project_GSTTI_39B_20170906.txt

Result_GSTTI_39B_20170906.txt

Sample_GSTTI_39B_20170906.txt

Water_GSTTI_39B_20170906.txt

The following comment was provided with this submission:
Tunnel and Air Sampling Jun to Aug 2017

If you need to identify this session at a later date you may use the Ticket Key:

Repository201796_262564203_kedd_GSTTI

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APPENDIX F
PERMITS
(FURNISHED ON CD)

NPDES

PERMITS

NOTICE OF INTENT
TO USE
NPDES GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES
(RULE 62-621.300(4), F.A.C.)

You must submit this completed Notice of Intent (NOI) form to the Department to get coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities provided in subsection 62-621.300(4), F.A.C. The Generic Permit document [DEP Document 62-621.300(4)(a)] tells you what construction activity qualifies for coverage, how you obtain and terminate coverage, what you must do to minimize pollution from your construction site, and what conditions apply to your project to use the generic permit. **You must submit the appropriate generic permit fee, as specified in paragraph 62-4.050(4)(d), F.A.C., with this NOI Form to obtain permit coverage.** You must read and understand the requirements of the generic permit document and the attached instructions before completing this NOI form. **Please print or type information in the appropriate areas below.**

For construction activities also requiring an Individual Environmental Resource Permit (ERP), under Chapter 62-330, F.A.C.:
If your construction activities are already authorized by a valid Individual ERP issued by the Department, Water Management District or a Delegated Local Government, you may also elect to use this NOI form to provide the required notice of commencement of construction, in lieu of Form 62-330.350(1) ("Construction Commencement Notice").

Do you wish to also provide notice of commencement of construction activities authorized under an Individual ERP permit through the use of this form? ☐ Yes ☒ No

I. IDENTIFICATION NUMBER:

A. Facility ID (if renewing coverage): FLR10QR12-001

B. ERP Permit Number* (if applicable): N/A

C. ERP Permitting Agency (if applicable): _____

*If the ERP permit authorizes phased construction, please also indicate which phase.

II. STORMWATER POLLUTION PREVENTION PLAN (SWPPP) DEVELOPED AND READY TO BE IMPLEMENTED: ☒ Yes ☐ No

*If No, you may not submit your NOI at this time.

III. APPLICANT INFORMATION:

A. Operator Name: FECC, Inc. * ERP Permittee Name (if different than "Operator"), if applicable:		B. Operator Status: P
C. Address: 3652 Old Winter Garden Rd		
D. City: Orlando	E. State: FL	F. Zip Code: 32805 1020
G. Responsible Authority: Dwayne Kirkland		

DEP Form 62-621.300(4)(b)
Effective Date: 02/10/2015

H. Responsible Authority's Phone No.:	(407) 296-9995
I. Responsible Authority's Fax No.:	(407) 296-9125
J. Responsible Authority's E-mail Address:	dkirkland@feccorporation.com

IV. PROJECT/SITE LOCATION INFORMATION:

A. Project Name:	NASA Kennedy Space Center		
B. Project Address/Location:	Launch Complex 39B Crawlerway		
C. City: Cape Canaveral		D. State: FL	E. Zip Code: 32920
F. County: Brevard	G. Latitude: 28 ° 37 ′ 44 ″	Longitude: -8 ° 37 ′ 30 ″	
H. Is the site located on Indian Country Lands? ☐ Yes ■ No		I. Water Management District: SJRWMD	
J. Project Contact: Gordon Arthur Kirkland			
K. Project Contact's Phone No.:	(407) 296-9995		
L. Project Contact's Fax No.:	(407) 296-9125		
M. Project Contact's E-mail Address:	gkirkland@feccorporation.com		
N. Additional E-mail correspondence, optional:	vsanagustin@feccorporation.com		

V. PROJECT/SITE ACTIVITY INFORMATION:

A. Indicate whether the project is Large or Small Construction (check only one):	■ Large Construction (Project will disturb 5 or more acres of land, Fee $400) ☐ Small Construction (Project will disturb between 1 and 4.99 acres of land, Fee $250)		
B. Approximate total area of land disturbance from commencement through completion of construction: 15.00 acres			
C. SWPPP Location:	☐ Address in Part III above ■ Address in Part IV above ☐ Other address (specify below)		
D. SWPPP Address:			
E. City:		F. State:	G. Zip Code:
H. Construction Period:	Start Date: 01/16/2017	Completion Date: 05/31/2017	

VI. DEWATERING INFORMATION:

A. Will dewatering operations be performed as part of the construction activities? ■ No ☐ Yes If yes, complete below. If no, skip this part and go to Part VII.
B. Is the project site currently identified as contaminated, or is there a site within 500 feet of the dewatering project identified as contaminated by a DEP or EPA cleanup/restoration program? You may use the Quick Link to DEP's Contamination Locator Map (CLM) and DEP's Institutional Controls Registry (ICR) Web Viewer to determine cleanup restoration status. You may access the CLM at: http://webapps.dep.state.fl.us/DepClnup/welcome.do or

http://ca.dep.state.fl.us/mapdirect/?focus=contamlocator. The ICR may be accessed at:
http://www.dep.state.fl.us/waste/categories/brownfields/pages/ICR.htm, or
http://ca.dep.state.fl.us/mapdirect/?focus=icr

☐ YES Continue to VI.C, below.
☐ NO Continue to Part VII.

C. Has the site been remediated?

☐ YES Continue to Part VII.
☐ NO Continue to VI.D, below.

D. Are the pollutants of concern (i.e. contamination) present in ground water at the dewatering project site at concentrations equal to or exceeding the surface water criteria in Rule 62-302.530?

☐ YES Dewatering activities do not qualify for coverage under this generic permit. However, the site may qualify for coverage under Rule 62-621.300(1), F.A.C., or under an individual wastewater permit on the appropriate form listed in Rule 62-620.910, F.A.C.

☐ NO Continue to Part VII.

VII. DISCHARGE INFORMATION:

A. MS4 Operator Name (if applicable):
B. Receiving Water Name: MOSQUITO LAGOON

VIII.CERTIFICATION[1]:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If providing notice of commencement of construction as required by an Individual Environmental Resource Permit, I also certify that I am authorized by the Permittee (identified in Part III.A., above), to commence construction activities authorized by the ERP Permit (identified in Part I.B., above).

Responsible Authority Name and Official Title (Type or Print):
Dwayne Kirkland, Vice President

Dwayne Kirkland — Responsible Authority Signature:

December 20, 2016 — Date Signed:

[1] Signatory requirements are contained in Rule 62-620.305, F.A.C.

INSTRUCTIONS – DEP FORM 62-621.300(4)(b)
NOTICE OF INTENT (NOI) TO USE GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES

Who Must File an NOI:

You must file the NOI and obtain coverage under the Construction Generic Permit if you discharge stormwater associated with large or small construction activities to surface waters of the State, including through a Municipal Separate Storm Sewer System (MS4), http://www.dep.state.fl.us/water/stormwater/npdes/docs/all_ms4_by_county.pdf.

Where to File NOI:

The Department encourages the electronic submission of NOIs using the Department's Interactive Notice of Intent (iNOI) available at http://www.fldepportal.com/go/. NOIs also may be submitted by paper copy to the following address:

NPDES Stormwater Notices Center, MS #3585
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Permit Fee:

Permit fees for large and small construction activities to be covered under the generic permit are specified in paragraph 62-4.050(4)(d), F.A.C. and available on our http://www.dep.state.fl.us/water/stormwater/npdes/fees.htm. You must submit the appropriate generic permit fee (either for large 5+ acres $400 or small 1- 4.99 acres $250 construction activities) with the completed NOI to obtain coverage under the generic permit. **Generic permit coverage will not be granted without payment of the appropriate permit fee.**

If the NOI is submitted electronically, the permit fee must be paid on-line by credit card or check. If the NOI is submitted using a paper copy, the permit fee must be paid by either check or money order made payable to: "Florida Department of Environmental Protection".

Part I – Identification Number:

If you are renewing coverage, please enter the project's DEP identification number (generic permit coverage number) if known. If this is a new project without an ID number then leave this item blank. If you know your ERP Permit Number or ERP Permitting Agency (if applicable) please identify it here, if not then leave these items blank.

Part II – Stormwater Pollution Prevention Plan (SWPPP) Completed:

Check the box to indicate whether you have completed your Stormwater Pollution Prevention Plan. You must complete your SWPPP and be ready to implement it before submitting your NOI.

Part III – Applicant Information:

Item A.: Provide the legal name of the person, firm, contractor, public organization or other legal entity that owns or operates the construction activity described in this NOI. The operator is the legal entity that has authority to control those activities at the project necessary to ensure compliance with the terms and conditions of the generic permit.

Item B.: Enter the appropriate one letter code from the list below to indicate the legal status of the operator:

F = Federal; S = State; P = Private; M = Public (other than federal or state); O = Other

Items C. – F.: Provide the complete mailing address of the operator, including city, state and zip code.

Items G. – J.: Provide the name, telephone and fax number (including area code) and E-mail address of the person authorized to submit this NOI on behalf of the operator (e.g., Jane Smith, President of Smith Construction Company on behalf of the operator, Smith Construction Company; John Doe, Public Works Director on behalf of the operator, City of Townsville; etc.). This should be the same person as indicated in the certification in Part VI.

Part IV – Project/Site Location Information:

Items A. – E.: Enter the official or legal name and complete street address, including city, state and zip code of the project. Do not provide a P.O. Box number as the street address. If it lacks a street address, describe the project site location (e.g., intersection of State Road 1 and Smith Street).

Item F.: Enter the county in which the project is located.

Item G.: Enter the latitude and longitude, **in degrees-minutes-seconds format**, of the approximate center of the project.

Item H.: Indicate whether the project is located on Indian Country Lands. If the project is located on Indian Lands you may not use this generic permit. Instead, you must apply to the http://cfpub.epa.gov/npdes/stormwater/const.cfm (EPA) for coverage.

Item I.: Enter the appropriate five or six letter code from the list below to indicate the http://www.dep.state.fl.us/secretary/watman/default.htm in which your project is located:

NWFWMD = Northwest Florida Water Management District
SRWMD = Suwannee River Water Management District
SFWMD = South Florida Water Management District
SWFWMD = Southwest Florida Water Management District
SJRWMD = St. John's River Water Management District

Items J. – M.: Enter the name, telephone and fax number (including area code) and E-mail address of the project contact person. The project contact is the person who is thoroughly familiar with the project, the facts reported in this NOI and who can be contacted by the Department if necessary.

Item N.: Enter additional E-mail correspondence as needed to receive permit related documentation. (Optional)

Part V – Project/Site Activity Information:

Item A.: Check the appropriate box to indicate whether the project involves large construction activity or small construction activity. **Check one box only.**

"Large Construction Activity" means construction activity resulting in the disturbance of five (5) or more acres of total land area. Large construction activity also includes the disturbance of less than five acres of total land area that is part of a larger common plan of development or sale such as a subdivision that will ultimately disturb five acres or more.

"Small Construction Activity" means construction activity resulting in the disturbance of equal to or greater than one (1) acre and less than five (5) acres of total land area. Small construction activity also includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one acre and less than five acres.

Item B.: Provide the approximate total area of land disturbance, in acres, that the project will involve from commencement of construction through completion.

Items C. - G.: Indicate the location where the Stormwater Pollution Prevention Plan (SWPPP) can be viewed. Provide the address where the SWPPP can be viewed if other than as provided in Parts II or III of the NOI. **Note that to be eligible for coverage under the generic permit, the SWPPP must have been prepared prior to filing this NOI.**

Item H.: Enter the estimated construction start and completion dates in the MM/DD/YY format.

Part VI – Dewatering Information:
If your site has "noncontaminated ground water", the CGP also authorizes discharges from ground water dewatering activities. A site will be presumed to have uncontaminated if it is not contaminated and there are no known contamination sites within 500 feet of the site. You may use the Department's http://webapps.dep.state.fl.us/DepClnup/welcome.do or the Institutional Controls Registry (ICR) Web Viewer http://www.dep.state.fl.us/waste/categories/brownfields/pages/ICR.htm, to determine the location of contaminate sites. The CGP does not authorize the discharge of contaminated ground water.

Part VII – Discharge Information:

To be covered under a CGP, you must provide the following information about where the discharge from your project will go. NOIs submitted without discharge information cannot be processed.

Item A.: If stormwater from your project discharges to a MS4 enter the name of the MS4 (e.g., City of Tallahassee MS4, Orange County MS4, FDOT District 5 MS4, etc.). If stormwater from your project does not discharge to an MS4 but to surface waters of the State, leave this item blank or indicate "N/A" and skip to Item B. of this part. **Please note that if your project discharges stormwater to an MS4, you must provide the MS4 operator with a copy of the completed NOI.** http://www.dep.state.fl.us/water/stormwater/npdes/docs/all_ms4_by_county.pdf

Item B.: If your project discharges stormwater to surface waters of the State, and not to an MS4, enter the name of the receiving water body to which the stormwater is discharged. Please provide the first named water body to which the stormwater from the project is discharged (e.g., Cypress Creek, Tampa Bay, unnamed ditch to St. Johns River, Tate's Hell Swamp, etc.).

In certain cases, stormwater from the project will discharge to both an MS4 and surface waters of the State. In this case, complete both Item A. and Item B.

Part VIII – Certification:

Type or print the name and official title of the Responsible Authority signing the certification. Please note that this must be the same person indicated in Item II.G. as the Responsible Authority. Sign and date the certification.

Section 403.161, F.S., provides severe penalties for submitting false information on this application (NOI) or any reports or records required by a permit. There are both civil and criminal penalties, in addition to the revocation of permit coverage for submitting false information.

Rule 62-620.305, F.A.C., requires that the NOI and any reports required by the permit be signed as follows:

A. For a corporation, by a responsible corporate officer as described in Rule 62-620.305, F.A.C.;
B. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
C. For a municipality, state, federal or other public facility, by a principal executive officer or elected official.

Florida Department of
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

December 20, 2016

Dwayne Kirkland
FECC, Inc.
3652 Old Winter Garden Rd
Orlando, FL 32805 1020

RE: Facility ID: FLR10QR12-001
NASA Kennedy Space Center
County: Brevard

Dear Permittee:

The Florida Department of Environmental Protection has received and processed your *Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities* (NOI) and the accompanying processing fee. This letter acknowledges that:

- your NOI is complete;
- your processing fee is paid-in-full; and
- you are covered under the *Generic Permit for Stormwater Discharge from Large and Small Construction Activities* (CGP), DEP Document No. 62-621.300(4)(a).

Your project identification number is **FLR10QR12-001**. Please include this number on all future correspondence to the Department regarding this permit.

This letter is **not** your permit; however, this letter does serve as **verification of permit coverage**. A copy of the permit language is available online at https://www.flrules.org/Gateway/reference.asp?No=Ref-04265 or by contacting the NPDES Stormwater Notices Center.

Your permit coverage becomes effective **December 23, 2016** and will expire **December 22, 2021**. To terminate your coverage prior to this expiration date, you must file a *National Pollutant Discharge Elimination System (NPDES) Stormwater Notice of Termination*, DEP Form 62-621.300(6) (NOT). An NOT must be filed within 14 days of either (a) your final stabilization of the site or (b) your relinquishment

of control of the construction activities to a new operator. To renew your coverage beyond the expiration date, you must submit a new NOI and processing fee to the Department no later than two days before coverage expires.

Until your permit coverage is terminated, modified, or revoked, you are authorized to discharge stormwater from the construction site referenced in your NOI to surface waters in accordance with the terms and conditions of the CGP. Some key conditions of the CGP are:

- implementation of your stormwater pollution prevention plan (SWPPP);
- implementation of appropriate construction best management practices (BMPs);
- conducting and documenting routine inspections; and
- retaining the records required by the permit (including your SWPPP) at the construction site or the alternate location specified in your NOI.

Projects that discharge stormwater associated with construction activity to a municipal separate stormwater system (MS4) shall submit a copy of the NOI or the Acknowledgement Letter within 7 days of receipt to the operator of the MS4.

If you have any questions concerning this Acknowledgment Letter, please contact the NPDES Stormwater Notices Center at (866) 336-6312 (toll-free).

Sincerely,

NPDES Stormwater Program

SWPPP

PERMITS

FECC, Inc.
dba Florida Environmental Compliance Corporation
3652 Old Winter Garden Road, Orlando, Florida 32805
tel 407/296-9995 • fax 407/296-9125 • www.feccorporation.com

CONSTRUCTION STORM WATER MANAGEMENT & POLLUTION PREVENTION PLAN

for

Air Sparge Infrastructure System Installation
Launch Complex 39B (LC39B)
Kennedy Space Center, Florida 32899

prepared for

Geosyntec Consultants, Inc.
50 South Belcher Road
Suite 116
Clearwater, FL 33765

prepared by

FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

December 15, 2016
Revision 0

CERTIFICATION BY OPERATOR AND/OR RESPONSIBLE AUTHORITY

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Lindy L. Kirkland, President
FECC, Inc.

12/15/16
Date

Project Name and Location Information:	*Air Sparge Infrastructure System Installation* *Launch Complex 39B (LC39B)* *Kennedy Space Center, Florida 32899* *Latitude 28° 37' 36.89" N* *Longitude 80° 37 '25.37" W*

A site map is enclosed as Figure 1. It includes:

1. Drainage patterns,
2. Approximate slopes after major grading activities,
3. Areas of soil disturbance,
4. All areas that are not to be disturbed,
5. Location of all major structural and non-structural controls,
6. The location of expected stabilization practices,
7. Wetlands and surface waters, and
8. Locations where storm water may discharge to a surface water or MS4.

Site Description

Describe the nature of the construction activity:	*Installation of infrastructure for air sparge system. Infrastructure installation includes construction of trenches in the ground so that air sparge piping/components and an underground electrical line can be installed. Locations of all air sparge piping and underground electrical line are shown in Figure 1. Trench construction in grassed areas will be resodded after backfilling. Approximately 10,000 SF of sod will be required in the affected areas.*

Describe the intended sequence of major soil disturbing activities:	*Trenches for air sparge piping and an electrical line will be excavated under the following order. Refer to the attached Figure 1.:* 1. *Main Branch A, approximately 480 feet..* 2. *Main Branch B, approximately 270 feet.* 3. *Leg 1A, approximately 360 feet.* 4. *Legs 1B and 3, approx.. 460 feet.* 5. *Leg 2, approximately 120 feet* 6. *Leg 4, approximately 260 feet* 7. *Electrical Line 50 feet* *Excavated soil will be staged adjacent to the trenches to be used as backfill after piping has been installed. Back fill shall be compacted using vibratory compaction techniques.*
Total area of the site:	*Approximately 15.0 acres*
Total area of the site to be disturbed:	*Areas of soil disturbance will be minimized. Soil excavations will be conducted approximately 1 acre or less at a time. Work will also be conducted during the dry season.*
Existing data describing the soil or quality of any storm water discharge from the site:	*No storm water data available.*
Estimate the drainage area size for each discharge point:	*Drainage area is silt fence area towards Outfall "X". See Figure 1.*
Latitude and longitude of each discharge point and identify the receiving water or MS4 for each discharge point:	*Potential Outfall X -* *Latitude 28° 37' 43.71"* *Longitude 80° 37' 32.69"* *Based on Google Earth elevations, storm water runoff is expected to discharge into a stormwater swale located northwest of the excavations. See "X" mark in Figure 1.*

Give a detailed description of all controls, Best Management Practices (BMPs) and measures that will be implemented at the construction site for each activity identified in the intended sequence of major soil disturbing activities section. Provide time frames in which the controls will be implemented. NOTE: All controls shall be consistent with performance standards for erosion and sediment control and storm water treatment set forth in s. 62-40.432, F.A.C., the applicable Storm water or Environmental Resource Permitting requirements of the Department or a Water Management District, and the guidelines

contained in the Florida Development Manual: A Guide to Sound Land and Water Management (DEP, 1988) and any subsequent amendments.
Best Management Practices (BMPs) include installing silt fencing and straw waddles in locations if necessary where storm water may discharge out of the excavation areas and into stormwater ditches or other low lying areas hydraulically attached to waters of the State. Silt fencing and straw waddles are shown in Figure 1.
Describe all temporary and permanent stabilization practices. Stabilization practices include temporary seeding, mulching, permanent seeding, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, vegetative preservations, etc.
1. *Filled areas that used to have grass will be resodded.* 2. *Silt fencing will be provided in areas downgradient of the excavation to prevent silty stormwater runoff from leaving the area of the excavation. Additional silt fence may be installed if deemed necessary to better protect stormwater quality. See Figure 1 for silt fencing locations.* 3. *Straw waddles will be placed in locations where stormwater runoff may exit or stream out of the jobsite. Additional straw waddles may be installed if deemed necessary to better protect stormwater quality. See Figure 1 for straw waddle locations.*
Describe all structural controls to be implemented to divert storm water flow from exposed soils and structural practices to store flows, retain sediment on-site or in any other way limit storm water runoff. These controls include silt fences, earth dikes, diversions, swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, coagulating agents and temporary or permanent sediment basins.
Structural controls include placing silt fencing and straw waddles in areas where storm water runoff may exit the excavation area and enter stormwater ditches or other low lying areas hydraulically attached to waters of the State.
Describe all sediment basins to be implemented for areas that will disturb 10 or more acres at one time. The sediment basins (or an equivalent alternative) should be able to provide 3,600 cubic feet of storage for each acre drained. Temporary sediment basins (or an equivalent alternative) are recommended for drainage areas under 10 acres.
Approximately 15 total acres will be disturbed at an incremental rate of approximately 1 acre of disturbed soil at a time. Some excavation areas are within a few feet of low lying areas that are hydraulically attached to waters of the State. Since excavation work is scheduled to be conducted during the dry season, the downgradient silt fencing and the straw waddles are considered to be sufficient to hold any sediment present in the stormwater runoff in place.
Describe all permanent storm water management controls such as, but not limited to, detention or retention systems or vegetated swales that will be installed during the construction process.
No permanent storm water management controls are proposed as part of FECC's scope of work.

Describe in detail controls for the following potential pollutants

Waste disposal, this may include construction debris, chemicals, litter, and sanitary wastes:	*Soil cuttings and other contaminated soil is planned to be transported to Omni Landfill located in St. Cloud, Osceola County.*
Offsite vehicle tracking from construction entrances/exits:	*N/A*
The proper application rates of all fertilizers, herbicides and pesticides used at the construction site:	*No fertilizers, herbicides, or pesticides will be applied on the property.*
The storage, application, generation and migration of all toxic substances:	*N/A*
Other:	*N/A*

Provide a detailed description of the maintenance plan for all structural and non-structural controls to assure that they remain in good and effective operating condition.
Contractor shall provide routine maintenance of sediment and erosion control features in accordance with the technical specifications or as follows, whichever is more stringent: *• Any required repairs shall be made immediately. Sediment deposits shall be removed when it exceeds the excavation limits.* *• Any inlet(s)/outfalls shall be inspected immediately after each rain event. Any required repairs shall be performed immediately.*
Inspections: Describe the inspection and inspection documentation procedures, as required by Part V.D.4. of the permit. Inspections must occur at least once a week and within 24 hours of the end of a storm event that is 0.50 inches or greater (see attached form).
Qualified personnel will inspect the site. All disturbed areas of construction that have not yet been stabilized, locations where vehicles enter and exit the site, and all other best management practices described in this document at least once every 7 days and within 24 hours of the end of a storm event that is 0.5 inches or greater. When all locations have been finally stabilized, the above inspections shall be conducted once every month until the Notice of Termination is filed. Bryon Pazdur and Victor San Agustin of FECC, Inc. hold a Qualified Storm Water Management Inspector Certification issued by the Florida Department of Environmental Protection. A qualified storm water inspector will conduct the above inspections.

Identify and describe all sources of non-storm water discharges as allowed in Part IV.A.3. of the permit. Flows from firefighting activities do not have to be listed or described.
Tap water from a water truck will be used for dust control if needed. No other non-storm water discharges are anticipated.

This SWPPP must clearly identify, for each measure identified within the SWPPP, the contractor(s) or subcontractor(s) that will implement each measure. All contractor(s) and subcontractor(s) identified in the SWPPP must sign the following certification:

"I certify under penalty of law that I understand, and shall comply with, the terms and conditions of the State of Florida Generic Permit for Storm water Discharge from Large and Small Construction Activities and this Storm water Pollution Prevention Plan prepared thereunder."

Name	Title	Company Name, Address and Phone Number	Date
Lindy L. Kirkland	President	FECC, Inc., 3652 Old Winter Garden Road, Orlando, FL 32805	12/15/16

Storm Water Pollution Prevention Plan Inspection Report Form

Inspections must occur at least once a week and within 24 hours of the end of a storm event that is 0.50 inches or greater.

Project Name: LC39B Air Sparge Infrastructure System Installation **FDEP NPDES Storm Water Identification Number: TBD**

Location	Rain data	Type of control (see below)	Date installed / modified	Current Condition (see below)	Corrective Action / Other Remarks

Condition Code:

G = Good **M = Marginal, needs maintenance or replacement soon** **P = Poor, needs immediate maintenance or replacement**

C = Needs to be cleaned **O = Other**

Control Type Codes

1. Silt Fence	10. Storm drain inlet protection	19. Reinforced soil retaining system	28. Tree protection
2. Earth dikes	11. Vegetative buffer strip	20. Gabion	29. Detention pond
3. Structural diversion	12. Vegetative preservation area	21. Sediment Basin	30. Retention pond
4. Swale	13. Retention Pond	22. Temporary seed / sod	31. Waste disposal / housekeeping
5. Sediment Trap	14. Construction entrance stabilization	23. Permanent seed / sod	32. Dam
6. Check dam	15. Perimeter ditch	24. Mulch	33. Sand Bag
7. Subsurface drain	16. Curb and gutter	25. Hay Bales	34. Other
8. Pipe slope drain	17. Paved road surface	26. Geotextile	
9. Level spreaders	18. Rock outlet protection	27. Rip-rap	

Inspector Information:

_____ Qualified FDEP Stormwater Inspector _____

Name **Qualification** **Date**

The above signature also shall certify that this facility is in compliance with the Storm water Pollution Prevention Plan and the State of Florida Generic Permit for Storm water Discharge from Large and Small Construction Activities if there are not any incidents of non-compliance identified above.

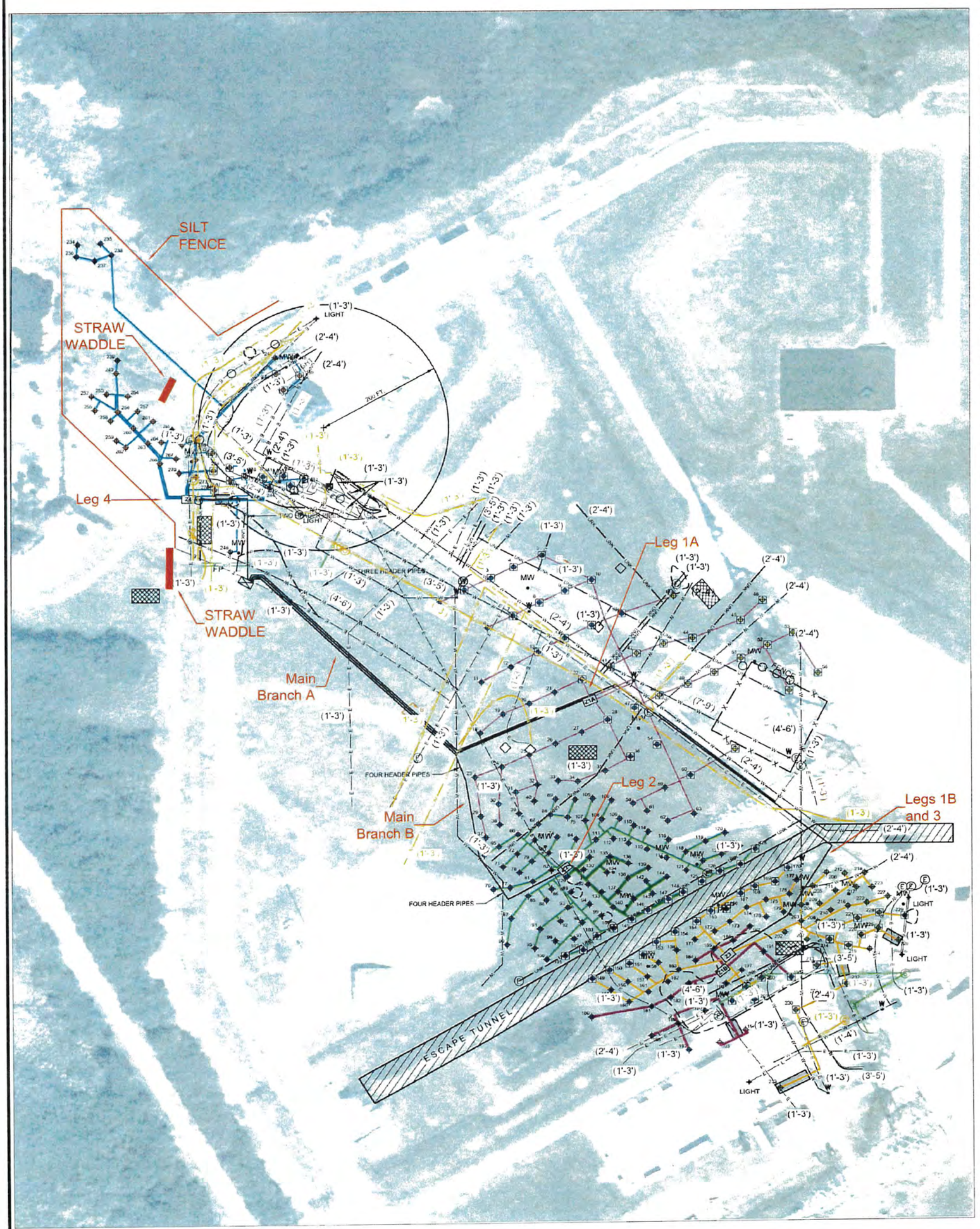
* * * * * *

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____ _____

Name (Responsible Authority) **Date**

Figures



NOTES:

1. Silt fence and hay waddle arrangements as shown above may change to better protect the environment if deemed necessary by Project Superintendent.

N

0 150 ft

SCALE

AIR SPARGE INFRASTRUCTURE SYSTEM INSTALLATION
Launch Complex 39B
Kennedy Space Center, FL 32899

Construction Stormwater Pollution Prevention Plan Layout

PROJECT NO.: F0064

DATE: Dec 15, 2016

FIGURE 1

FLORIDA ENVIRONMENTAL COMPLIANCE CORPORATION
3652 Old Winter Garden Road
Orlando, Florida 32805

APPENDIX G
WASTE MANIFESTS
(FURNISHED ON CD)

MAY 2017
SOIL AND GROUNDWATER

WASTE MANIFESTS

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	NA		800-771-1050	5020968

GENERATOR

5. Generator's Name and Mailing Address
NASA-Kennedy Space Center.
Mail Code SI-E2
Kennedy Space Center, FL 32899
Generator's Phone: 321-867-6971

Generator's Site Address (if different than mailing address)
LC39B
Kennedy Space Center, FL 32899

6. Transporter 1 Company Name: FECC, Inc. — U.S. EPA ID Number: FLD981748015

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Liquid Environmental Solutions
1640 Talleyrand Ave.
Jacksonville, FL 32206
Facility's Phone: 904-438-2138
U.S. EPA ID Number: NA

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non-Regulated Material (Purge/Groundwater) RCRA & D.O.T. Non-Hazardous, None, PF# 520883	001	TT	3500 EST	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
Emergency Response Phone #800-771-1050
Mail Manifest To: FECC, Inc., 3652 Old Winter Garden Road, Orlando, FL, 32805
PR# F0064
MAY03'17 14:18:54

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Michael J. Delz — Signature: Michael J. Delz — Month: 5 Day: 1 Year: 17

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: SHANE BOCCO — Signature: Shane Bocco — Month: 5 Day: 3 Year: 17

Transporter 2 Printed/Typed Name — Signature — Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: CRS Fellman/LA — Signature: [signature] — Month: 5 Day: 3 Year: 17

TPK
#14006
Roll off 52037

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	NA		800-771-1050	F0064-1

5. Generator's Name and Mailing Address
NASA-Kennedy Space Center
Mail Code SI-EZ
Kennedy Space Center, FL 32899
Generator's Phone: 321-867-6971

Generator's Site Address (if different than mailing address)
LC39B
Kennedy Space Center, FL 32899

6. Transporter 1 Company Name: FECC, Inc.
U.S. EPA ID Number: FLD981748015

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address: Omni Waste of Osceola County
1501 Omni Way
St. Cloud, FL 34773
Facility's Phone: 407-891-3720
U.S. EPA ID Number: NA

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non-Regulated Material (Soil Cuttings) PF# FECC2752-17-004	001	CM	18	T	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
Emergency Response: 800-771-1050
Mail Manifest To: FECC, 3652 Old Winter Garden Road, orlando, FL, 32805
PR# F0064

GENERATOR

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Michael J. Deliz
Signature: M. J. Deliz
Month: 5 Day: 3 Year: 17

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Cychna Garrett
Signature: C. Garrett
Month: 5 Day: 4 Year: 17

Transporter 2 Printed/Typed Name
Signature
Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: T Yates
Signature:
Month: 5 Day: 4 Year: 17

169-BLC-O 6 10498 (Rev. 9/09)

DESIGNATED FACILITY TO GENERATOR

Roll off # 52039

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	NA		800-771-1050	F0064-2

GENERATOR

5. Generator's Name and Mailing Address

NASA-Kennedy Space Center.
Mail Code SI-E2
Kennedy Space Center, FL 32899

Generator's Phone: 321-867-6971

Generator's Site Address (if different than mailing address)

LC39B
Kennedy Space Center, FL 32899

574400 4006

6. Transporter 1 Company Name: FECC, Inc. — U.S. EPA ID Number: FLD981748015

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address

Omni Waste of Osceola County
1501 Omni Way
St. Cloud, FL 34773

U.S. EPA ID Number: NA

Facility's Phone: 407-891-3720

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Non-Regulated Material (Soil Cuttings) PF# FECC2752-17-004	001	CM	18	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

Emergency Response: 800-771-1050
Mail Manifest To: FECC, 3652 Old Winter Garden Road, orlando, FL, 32805
PR# F0064

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Michael J. Deliz — Signature: M J Deliz — Month: 5 Day: 3 Year: 17

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Ctehna Garrett — Signature: C. Gn — Month: 5 Day: 8 Year: 17

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: T Yates — Signature — Month: 5 Day: 8 Year: 17

MAY 2017
CONCRETE AND SOIL MIXTURE

WASTE MANIFESTS

KSC Landfill
East Schwartz Road
Operated by Yang Enterprises
Supervisor- Derick Fowler

Transaction No. 50584

	Date	Time	Scale
In:	05/11/2017	08:33	1
Out:	05/11/2017	08:59	1

Vehicle	B35-27V	FECC INC ROL	# 53051
Account	FECC Demol	FECC Demolit	
Material	ASPHALT/RO	BROKEN UP AS	Conc/Asph. Debris
User1	CYEHNA		
User2D:	PAD B		

Comments:GEO SYNTEC
Regular Transaction
Charge by Weight

Gross: 71220 lb (M)
Tare: 39220 lb
Net: 32000 lb

Driver Signature:
_____

KSC Landfill
East Schwartz Road
Operated by Yang Enterprises
Supervisor- Derick Fowler

Transaction No. 50590

	Date	Time	Scale
In:	05/11/2017	09:54	1
Out:	05/11/2017	10:22	1

Vehicle	B35-27V	FECC INC ROL
Account	FECC Demol	FECC Demolit
Material	ASPHALT/RO	BROKEN UP AS
User1	CYEHNA	
User2D:	PAD B	

Comments:geo syntec
Regular Transaction
Charge by Weight

52051

CONC. DEBRIS

Gross: 68260 lb (M)
Tare: 36940 lb
Net: 31320 lb

Driver Signature:

_____

KSC Landfill
East Schwartz Road
Operated by Yang Enterprises
Supervisor- Derick Fowler

Transaction No. 50594

	Date	Time	Scale
In:	05/11/2017	12:02	1
Out:	05/11/2017	12:12	1

Vehicle	B35-27V	FECC INC ROL # 52051
Account	FECC Demol	FECC Demolit
Material	Soil	various area mix
User1	CYEHNA	
User2D:	PAD B	

Comments:GEO SYNTEC
Regular Transaction
Charge by Weight

Gross: 76560 lb (M)
Tare: 36900 lb
Net: 39660 lb

Driver Signature:
_____

KSC Landfill
East Schwartz Road
Operated by Yang Enterprises
Supervisor- Derick Fowler

Transaction No. 50600

	Date	Time	Scale
In:	05/11/2017	13:08	1
Out:	05/11/2017	13:17	1

Vehicle	B35-27V	FECC INC ROL
Account	FECC Demol	FECC Demolit
Material	Soil	various area
User1	CYEHNA	
User2D:	PAD B	

Comments:GEO SYNTEC
Regular Transaction
Charge by Weight

Gross:	69740 lb	(M)
Tare:	36860 lb	
Net:	32880 lb	

Driver Signature:

_____

KSC Landfill
East Schwartz Road
Operated by Yang Enterprises
Supervisor- Derick Fowler

Transaction No. 50607

	Date	Time	Scale
In:	05/11/2017	14:05	1
Out:	05/11/2017	14:29	1

Vehicle	B35-27V	FECC INC ROL # 53051
Account	FECC Demol	FECC Demolit
Material	Soil	various area mix debris
User1	CYEHNA	
User2D:	PAD B	

Comments:GEO SYNTEC
Regular Transaction
Charge by Weight

Gross: 73320 lb (M)
Tare: 37120 lb
Net: 36200 lb

Driver Signature:
_____

JUNE 2017
CONCRETE AND SOIL MIXTURE

WASTE MANIFESTS

KSC Landfill
East Schwartz Road
Operated by Yang Enterprises
Supervisor- Derick Fowler

Transaction No. 50708

	Date	Time	Scale
In:	06/01/2017	08:41	1
Out:	06/01/2017	08:59	1

Vehicle	B35-27V	FECC INC ROL	# 52051
Account	FECC Demol	FECC Demolit	
Material	Soil	various area	Mix Debris
User1	CYEHNA		
User2D:	PAD B		

Comments:
Regular Transaction
Charge by Weight

Gross: 69660 lb (M)
Tare: 36840 lb
Net: 32820 lb

Driver Signature:
_____

KSC Landfill
East Schwartz Road
Operated by Yang Enterprises
Supervisor- Derick Fowler

Transaction No. 50711

	Date	Time	Scale
In:	06/01/2017	09:45	1
Out:	06/01/2017	09:57	1

Vehicle	B35-27V	FECC INC ROL	# 53051
Account	FECC Demol	FECC Demolit	
Material	Working Fa	Construction	Asph Debris
User1	CYEHNA		
User2D:	PAD B		

Comments:
Regular Transaction
Charge by Weight

Gross:	56180 lb	(M)
Tare:	37080 lb	
Net:	19100 lb	

Driver Signature:
_____

KSC Landfill
East Schwartz Road
Operated by Yang Enterprises
Supervisor- Derick Fowler

Transaction No. 50714

	Date	Time	Scale
In:	06/01/2017	10:33	1
Out:	06/01/2017	10:43	1

Vehicle	B35-27V	FECC INC ROL	#52051
Account	FECC Demol	FECC Demolit	
Material	Soil	various area	Mix Debris
User1	CYEHNA		
User2D:	PAD B		

Comments:
Regular Transaction
Charge by Weight

Gross: 62400 lb (M)
Tare: 36760 lb
Net: 25640 lb

Driver Signature:
_____

KSC Landfill
East Schwartz Road
Operated by Yang Enterprises
Supervisor- Derick Fowler

Transaction No. 50917

	Date	Time	Scale
In:	06/29/2017	10:07	1
Out:	06/29/2017	10:23	1

Vehicle	B34-74V	FECC INC ROL * 53051
Account	FECC Demol	FECC Demolit
Material	Working Fa	Construction
User1	CORY	
User2D:	PAD B	

Comments:UNSPECIFIED CONCRETE Conc. Debris
Regular Transaction
Charge by Weight

Gross:	40900 lb	(M)
Tare:	37760 lb	
Net:	3140 lb	

Driver Signature:
_____

APPENDIX H
DAILY CONSTRUCTION REPORTS
(FURNISHED ON CD)

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 45º - 70 º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Mike Burcham	Geosyntec	Engineer
Zach Munger	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Fred Portofe	FECC	Project Manager
Shane Bocco	FECC	Foreman
Jeff Gross	FECC	Laborer
David Givens	FECC	Tech
Greg Bassett	FECC	Laborer
Ryan Graf	FECC	Laborer
Nick Alban	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site. Mike Burcham and Zach Munger of Geosyntec on site to oversee drilling operations. DMS conducts tailgate meeting.

7:00 FECC crew arrives site. DMS conducts tailgate meeting with FECC crew. DMS discuss staging areas and laydown locations with FECC crew.

7:30 DMS meets Mike Deliz at Pad Ops building to brief Mike Deliz on daily tasks proposed.

7:50 DMS returns to site and joins Zach Munger through first well installation for instructions on drilling procedure, soil logging and ASW screen placement.

8:00 Mike Deliz on site.

8:30 Mike Deliz departs site.

9:30 DMS returns to FECC staging area to direct staging and site setup activities. FECC crew did not have sufficient construction fence, post and zip-ties for exclusion zone setup. Also, no 1" or 2" HDPE on site. DMS asked FECC crew if they were prepared to trench and pipe across road in two locations. FECC replied that they were ready, but when questioned about; the availability of lime rock, proctor, MOT material, concrete and a reasonable plan of how they would approach the trenching, pipework, and restoration, it was clear that very little preplanning had been done. DMS asked when these issues would be resolved, and was told by FECC that they would have these issues settled by tomorrow morning. DMS relayed this information to Mike Deliz and Eric Sager.

10:30 FECC crew sets up and begins potholing for electrical conduit trenching and piping.

12:00 All personnel break for lunch.

13:00 All personnel return from lunch, continue potholing for electrical conduit placement. Also, begin potholing from ASWs to bundle trench.

DMS conducts AS test on ASWs (which includes using a portable air compressor to push air into individual ASWs at different rates and/or pressures).

14:00 Continue potholing utilities in area south of LOX sphere.

15:00 Continue potholing utilities in area south of LOX sphere.

16:30 Begin cleaning up and securing site for departure.

16:45 All personnel depart site.

No photos taken.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 50º - 81º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Mike Burcham	Geosyntec	Engineer
Zach Munger	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Fred Portofe	FECC	Project Manager
Shane Bocco	FECC	Foreman
Jeff Gross	FECC	Laborer
David Givens	FECC	Tech
Greg Bassett	FECC	Laborer
Ryan Graf	FECC	Laborer
Nick Alban	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Eric Sager	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site. GPI crew on site, FECC crew on site. DMS Conducts tailgate meeting. Mike Burcham and Zach Munger provide oversight of drilling activities.

7:00 FECC crew sets up and continues potholing. Also, begin setting up construction fence around area south of LOX sphere.

DMS checks on the progress FECC has made on being ready to trench and pipe across road. FECC is not ready to trench, pipe and backfill due to the same issues discussed in yesterday's DCR.

10:00 FECC continue potholing and hand digging trenches for conduit and ASW piping south of LOX sphere.

Install silt fence along swale south of LOX sphere.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch. Continue potholing and hand-digging trenches.

DMS conducts AS test on ASWs (which includes using a portable air compressor to push air into individual ASWs at different rates and/or pressures).

14:00 FECC crew continues potholing and hand-digging trenches.

16:30 Begin cleaning up and securing site for departure.

16:43 All personnel depart site.

No photos taken today.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 55º - 81º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Mike Burcham	Geosyntec	Engineer
Zach Munger	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Fred Portofe	FECC	Project Manager
Shane Bocco	FECC	Foreman
Jeff Gross	FECC	Laborer
David Givens	FECC	Tech
Greg Bassett	FECC	Laborer
Ryan Graf	FECC	Laborer
Nick Alban	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Eric Sager	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Electrical Conduit	Not Recorded	2-inch diameter

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 hrs. DMS arrives on site. GPI crew on site, FECC crew on site. DMS conducts tailgate meeting – safety topic; PPE, sunblock and heavy equipment safety.

7:00 hrs. Drilling crews set up and begin drilling between cable trays and escape tunnel; Mike Burcham and Zach Munger of Geosyntec provide oversight of drilling activities.

DMS provides oversight of FECC crew. FECC crew set up and continue potholing to verify utility locations and depths, digging around completed wells to prep for wellhead installation, install construction fence where needed, build forms for ASW surface completions, install silt fence as needed and assemble wellhead fittings.

8:00 hrs. Eric Sager of Geosyntec on site to walk site and observe progress.

8:20 hrs. Mike Deliz of NASA on site to walk site and observe progress.

9:05 hrs. Mike Deliz departs site.

FECC crew begin excavating trench for electrical conduit placement.

9:40 hrs. Eric Sager departs site.

10:00 hrs. Electrical conduit material delivered to site; begin installing conduit. Continue preparing completed wells for surface completions.

11:00 hrs. Continue installing electrical conduit and preparing for wellhead surface completions.

12:00 hrs. Break for lunch.

12:30 hrs. Return from lunch. Continue install electrical conduit and preparing wellheads for surface completion.

14:00 hrs. Installation of electrical conduit complete, begin backfilling trench.

15:30 hrs. Begin cleaning up and securing site.

16:40 hrs. All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

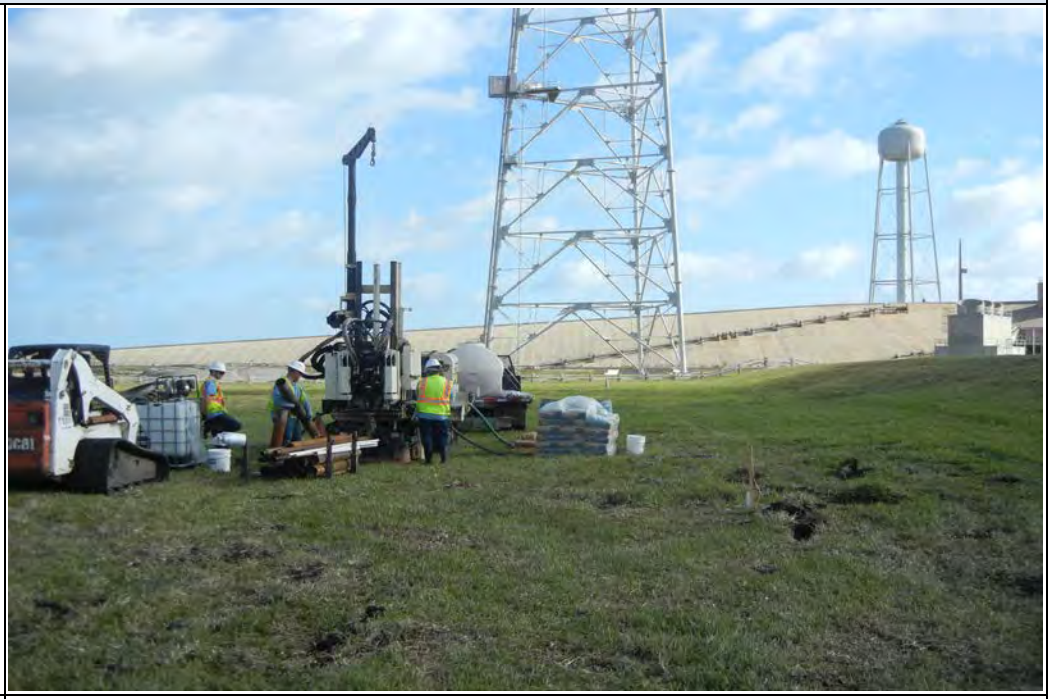
PROJECT: Launch Complex 39B	**DATE:** 1/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: East

Description: View of ASW well installation.



Photograph No. 2

Direction: NA

Description: View of potholing and hand-digging trench for electrical conduit.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: NA Description: View of potholing near Electrical Equipment (EE) building.	
Photograph No. 4 Direction: NA Description: View of clearing and preparing ASW for wellhead construction.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 59º - 82º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Mike Burcham	Geosyntec	Engineer
Zach Munger	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Fred Portofe	FECC	Project Manager
Shane Bocco	FECC	Foreman
Jeff Gross	FECC	Laborer
David Givens	FECC	Tech
Greg Bassett	FECC	Laborer
Ryan Graf	FECC	Laborer
Nick Alban	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Limestone	18.79 tons	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site. GPI crew on site, FECC crew on site. Mike Burcham and Zach Munger provide oversight of drilling activities.

7:00 FECC crew set up and continue backfilling trench for electrical conduit. Also, continue building well heads in area south of LOX sphere.

FECC crew is still not prepared to trench across road in LOX area.

8:00 Continue building ASW wellheads, trenching, and piping in area south of LOX area.

10:00 Continue building ASW wellheads, trenching, and piping in area south of LOX area.

Also, begin installing construction fence between tree line and ASWs outside perimeter fence.

12:00 All personnel break for lunch.

13:00 All personnel return from lunch.

14:30 Continue building ASW wellheads, trenching, and piping in area south of LOX area.

16:30 Clean up and secure site for departure.

16:45 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Northeast

Description: View of trenching of ASWs south of LOX sphere.



Photograph No. 2

Direction: NA

Description: View of ASW surface completion preparation.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Southwest

Description: View of trench and wooden support for AS System electrical main disconnect.



Photograph No. 4

Direction: North

Description: View of exclusion zone for trenching south of Lox sphere.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 59º - 82º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Mike Burcham	Geosyntec	Engineer
Zach Munger	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
David Givens	FECC	Tech
Greg Bassett	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site. GPI crew on site, FECC crew on site. Mike Burcham and Zach Munger provide oversight of drilling activities.

7:00 Also, continue building well heads in area south of LOX sphere.

FECC crew is still not prepared to trench across road in LOX area.

DMS conducts AS test on ASWs (which includes using a portable air compressor to push air into individual ASWs at different rates and/or pressures).

10:45 Continue building ASW wellheads, trenching, and piping in area south of LOX area.

12:00 All personnel break for lunch.

12:30 All personnel return from lunch.

14:30 Continue building ASW wellheads, trenching, and piping in area south of LOX area.

15:30 Clean up and secure site for departure.
Construction fence installed outside fence perimeter.

16:45 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:**1/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

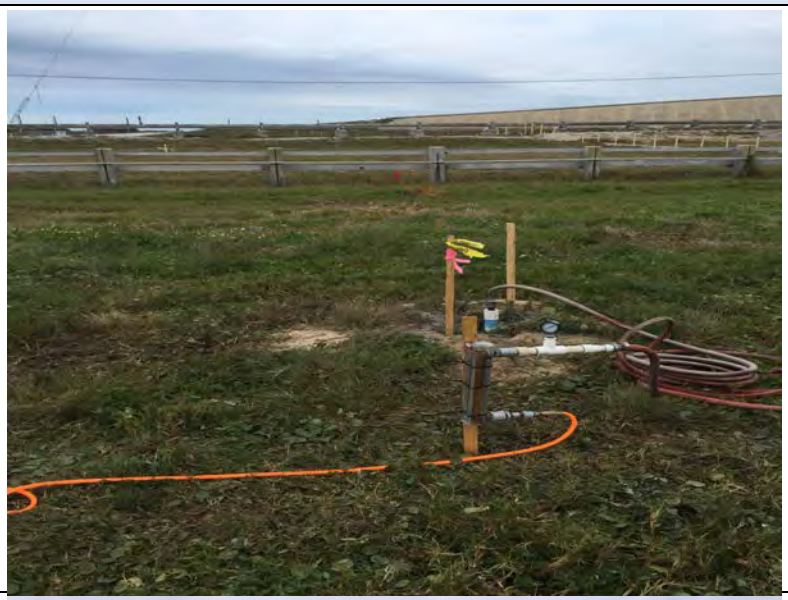
Photograph No. 1 Direction: West Description: View of trenching and piping of ASW south of LOX sphere.	
Photograph No. 2 Direction: Northeast Description: View of trenching, piping and wellhead preparation in area south of LOX sphere.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: Northwest Description: View of AS testing on newly installed ASW12.	
Photograph No. 4 Direction: West Description: View of AS test on newly installed ASW12.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 40º - 61º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Whitney Morrison	Geosyntec	Engineer
Ron Kent	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Fred Portofe	FECC	Project Manager
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Greg Bassett	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Jim Langenbach	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS at Titusville office completing paperwork, and loading equipment and material.

7:45 DMS and Ron Kent travel to site.

8:15 Arrive on site. DMS speaks with Mike Deliz to discuss daily activities.

8:25 Mike Deliz departs site.

8:30 Jim Langenbach and Whitney Morrison arrive on site. Geosyntec team discuss drilling locations and well installation guidelines. FECC crew arrives site and checks out equipment – portion of crew are at badging station while badging authority is cleared.

9:20 Drillers arrive site and set up on new drilling locations.

10:00 DMS conducts tailgate meeting with Geosyntec and drilling crews.

10:22 Begin drilling wells. Whitney Morrison and Ron Kent to provide drilling oversight; Jim Langenbach provide consultation on logging lithology and well installation guidelines.

DMS discuss daily activity with FECC crew. Due to lack of equipment, material and delay of additional employees awaiting badging, FECC are unable to continue trenching and piping.

Additional FECC crew on site. Begin installing construction fence across road from LOX sphere.

11:30 Jim Langenbach departs site.

12:00 FECC crew break for lunch. DMS and Eric Sager (Geosyntec) discuss the need to start trenching and installing piping across road by LOX sphere. DMS discuss with FECC crew. FECC crew did not have material for MOT on hand, or a walk-behind concrete saw. DMS reminded crew that asphalt is 6”-8” thick.

12:45 FECC return from form lunch. DMS suggest to FECC to ask GPI crew to use their barricades and cones to set up partial road closure. Eric Sager gets approval from Mike Deliz for partial road closure. DMS gets approval from Pad Operations for approval implement a partial road closure. DMS informs FECC crew to start making asphalt cut across road for ASW-250 and ASW-251. FECC crew sets up partial lane closure.

14:30 FECC crew begin saw cutting for trench from ASW-250 and ASW-251 to centerline of road.

15:30 Asphalt cut from ASWs to centerline complete. However, the asphalt cut did not penetrate the complete thickness of asphalt. Fred Portofe informed DMS that a walk-behind saw would be on site tomorrow morning. FECC crew begin breaking down MOT, cleaning up and securing site.

16:45 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Southwest

Description: Asphalt cut from ASW-250 and ASW-251 to centerline of road.



Photograph No. 2

Direction: North

Description: View of partial road closure for saw cut.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: North Description: View of construction fence and partial road closure.	
Photograph No. 4 Direction: West Description: View of trench and piping from ASWs in area south LOX Sphere.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 40º - 61º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Whitney Morrison	Geosyntec	Engineer
Ron Kent	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Bryon Pazdur	FECC	Project Manager
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Greg Bassett	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site, conducts tailgate meeting with drillers and Geosyntec. Whitney Morrison and Ron Kent to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew begins saw cutting and trenching across road for ASW-250 and ASW-251.

8:10 Mike Deliz on site.

8:30 Mike Deliz off site.

9:00 FECC crew continues trenching as saw cutting across road.

10:30 Trenching complete, begins installing HDPE pipe from ASW-250 and ASW-251, crossing road.

12:00 All personnel break for lunch.

12:30 All personnel return from lunch. Continue installing HDPE pipe across road.

13:30 Begin backfilling trench from ASW-250 and ASW-251 and start pressuring testing HDPE pipe.

14:00 Pipes for ASW-250 and ASW-251 were pressure tested and held 60 PSI for approximately 15 minutes – passed by DMS. During the pressure tests, the pipe was squirted with soapy water to check if bubbles would be formed from escaping air.

15:00 Two density tests completed for sub-surface soil, one at the centerline of road and another between ASW-250 and ASW-251.

15:15 Backfill and compact limestone.

Trenching and piping ASWs 241-246, 277-279, and 275 completed.

16:30 Clean up and secure site.

15:45 Depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: West Description: View of trench crossing road for ASW 250 and 251.	
Photograph No. 2 Direction: South Description: Trench and piping begin installed and backfilled for ASWs 250 and 251.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 1/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: North Description: View of traffic plate placement for trench containing piping for ASWs 250 and 251.	
Photograph No. 4 Direction: West Description: View of backfilling trench for ASWs 250 and 251.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 40º - 61º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Whitney Morrison	Geosyntec	Engineer
Ron Kent	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Bryon Pazdur	FECC	Project Manager
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Greg Bassett	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site, conducts tailgate meeting with drillers and Geosyntec. Whitney Morrison and Ron Kent to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew begins saw cutting and trenching across road south of LOX Sphere.

8:00 Mike Deliz on site.

8:45 Mike Deliz off site.

FECC crew continues trenching and saw cutting across road.

10:30 Trenching complete, begin installing HDPE pipe crossing road including ASWs 241 – 246, 275 and 277-279.

12:00 Installing HDPE pipe across road complete, all personnel break for lunch.

12:30 All personnel return from lunch.

Preform pressure tests on ASWs 241 – 246, 250, 251, and 277-279 and Z4L1 and Z4L2. All pipes held 60 PSI for approximately 15 minutes – passed by DMS.

Begin backfilling and compacting trench.

15:30 Backfilling and compacting soil compete. Density test collected on subsurface soil in trench south of LOX sphere, and on limestone placed and compacted in trench for ASWs 250 and 251 completed yesterday.

15:45 Clean up and secure site.

16:45 Depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Northwest

Description: View of trenching for ASWs crossing road by LOX area.



Photograph No. 2

Direction: North

Description: View of partial road closure for trench crossing road west of LOX sphere.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: West Description: View of traffic plates covering trenches crossing the road.	
Photograph No. 4 Direction: Southwest Description: View of partial road closure for trench crossing road west of LOX sphere.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 40º - 61º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Whitney Morrison	Geosyntec	Engineer
Ron Kent	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Bryon Pazdur	FECC	Project Manager
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Greg Bassett	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site, conducts tailgate meeting with drillers and Geosyntec. Whitney Morrison and Ron Kent to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

8:10 Mike Deliz on site.

8:30 Mike Deliz off site.

DMS and Mike Deliz discuss proposed location of proposed electrical line installation.

9:00 FECC crew continues trenching across road.

12:00 All personnel break for lunch.

12:30 All personnel return from lunch. Continue installing HDPE pipe across road and building wellheads.

15:15 Backfill and compact limestone.

16:30 Clean up and secure site. Wellheads for ASWs 241-246, 250, 251, 277-279, and 275 completed.

15:45 Depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: North

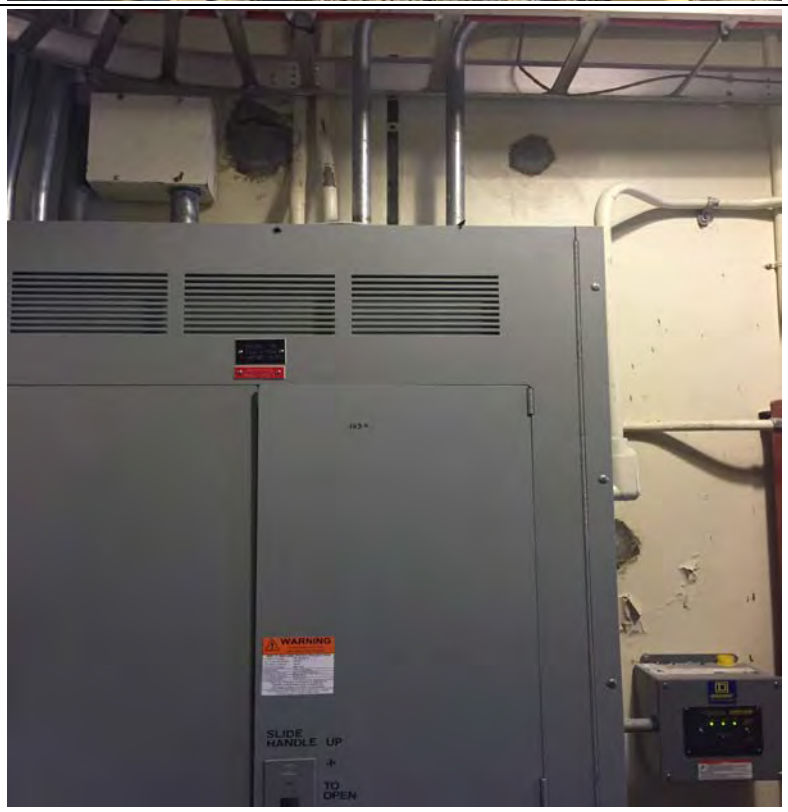
Description: View of area for proposed electrical line installation.



Photograph No. 2

Direction: NA

Description: View of electrical breaker box for proposed electrical line.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: East Description: View of support and trench for electrical line.	
Photograph No. 4 Direction: West Description: View of drilling and construction activity for pad.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 64º - 78º		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Whitney Morrison	Geosyntec	Engineer
Ron Kent	Geosyntec	Hydrogeologist
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Bryon Pazdur	FECC	Project Manager
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Greg Bassett	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Concrete Sampling Subcontractor	Universal Engineering Sciences, Inc.
Concrete Vendor	Titan Concrete

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Concrete	5 cubic yards	4,000 psi fiber mesh

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site, conducts tailgate meeting with drillers and Geosyntec. Whitney Morrison and Ron Kent to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew begins trenching wells in area across road (west) from LOX sphere.

Also, backfilling trench crossing road south of LOX sphere with limestone.

Install complete road closure blocking traffic on the trench crossing road by ASWs 250 and 251, and trench south of LOX sphere. Mike Deliz cleared this with Pad Ops.

Road closure necessary for concrete pour scheduled at 14:00 hrs.

8:20 Mike Deliz on site.

9:15 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC prepare for concrete pour scheduled for today.

13:00 DMS departs site to submit paperwork for NASA badge renewal; also, to escort concrete truck on site.

14:00 DMS contacted by Bryon Pazdur to notify that concrete truck will be at badging station later than expected (approx. 14:50).

14:45 Concrete truck arrives at badging station (driver has a permanent NASA badge) and follows DMS to site.

15:00 DMS arrives on site followed by concrete truck. Begin concrete placement.

Universal is on site to collect slump test and cylinders for concrete sample.

17:00 Concrete placement complete. Clean up and secure site.

17:10 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Southwest

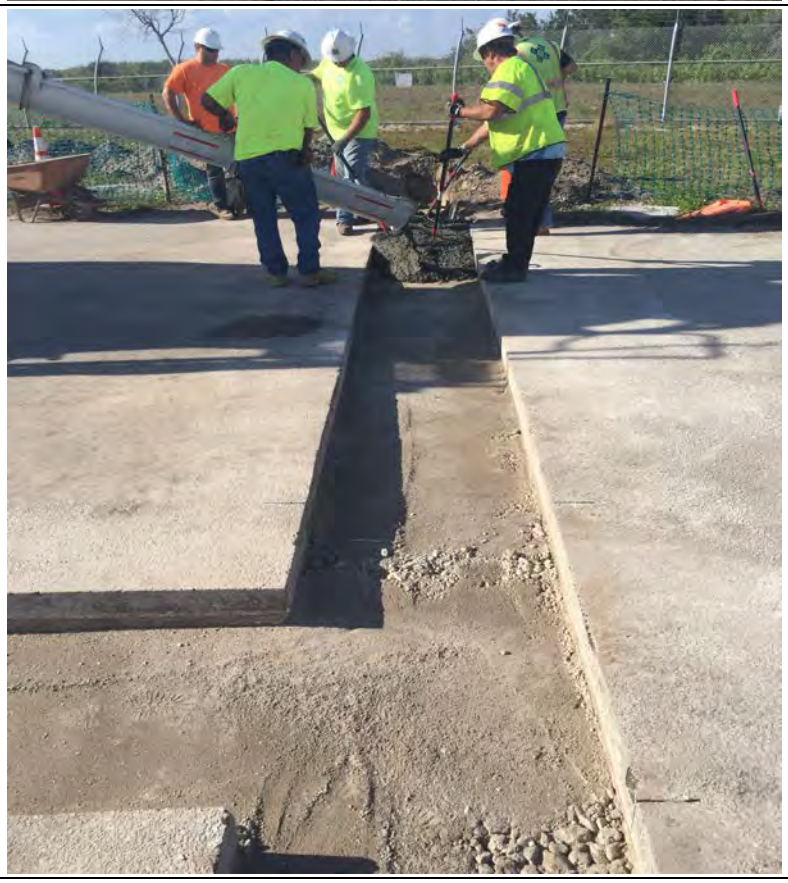
Description: View of concrete placement for trench for ASW250 and 251.



Photograph No. 2

Direction: West

Description: View of concrete placement for trench for ASW250 and 251.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: East Description: View of concrete being finished for area south of LOX tank.	
Photograph No. 4 Direction: Northwest Description: View of concrete placement for ASWs 250 and 251.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 46º - 73º Clear		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Warzinski	Geosyntec	Engineer
Alexis Johnson	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Greg Bassett	FECC	Laborer
David Giddnes	FECC	Tech
Fritz Nereus	FECC	Tech

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives site, conducts tailgate meeting with drillers and Geosyntec. Alex Warzinski and Alexis Johnson to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew begins taking down signs, barricades and cones to open up road from road closure put in place on Monday, February 3.

8:00 Mike Deliz on site.

8:30 Mike Deliz off site.

FECC begin backfilling trenches west of road and north of discharge pipe in LOX area.

12:00 All personnel break for lunch.

12:30 All personnel return from lunch.

FECC begin organizing equipment and material, exclusion zone refreshing general housekeeping.

16:00 Secure site.

16:15 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Northeast Description: View of piping to ASWs south of LOX sphere.	
Photograph No. 2 Direction: North Description: View of trenching west of LOX sphere.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 53º - 77º Clear, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Warzinski	Geosyntec	Engineer
Alexis Johnson	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site, conducts tailgate meeting with drillers and Geosyntec. Alex Warzinski and Alexis Johnson to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew continues organizing equipment and material, and reinforcing exclusion zones.

8:00 Mike Deliz on site. DMS and Mike Deliz discuss layout of Z4 manifolds – manifold boxes to be placed with parallel with blast zone.

8:45 Mike Deliz off site.

Roll off delivered to site for C&D material. Delivered by FECC.

FECC crew also trenching and placing pipe west of road and south of discharge pipe in LOX area.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue trench and pipe placement.

16:30 Clean up and secure site.

16:45 Depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Northwest Description: View of trenching west of LOX sphere.	
Photograph No. 2 Direction: South Description: View of trenching west of LOX sphere.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 53º - 77º Clear, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Warzinski	Geosyntec	Engineer
Alexis Johnson	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site, conducts tailgate meeting with drillers and Geosyntec. Alex Warzinski and Alexis Johnson to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew begins forming wellheads for ASWs 241-246, 277-279, and 275 in preparation for concrete placement.

12:00 all personnel break for lunch.

12:45 All personnel return from lunch and continue forming wellheads for ASWs 241-246, 277-279, and 275 in preparation for concrete placement.

Also grading ground where trenching disturbance occurred south of LOX sphere.

16:00 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: NA Description: View of form for wellpad.	
Photograph No. 2 Direction: North Description: View of pipe crossing road from ASWs south of LOX sphere.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 64º - 82º Clear, wind 15 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Warzinski	Geosyntec	Engineer
Alexis Johnson	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives site, conducts tailgate meeting with drillers and Geosyntec. Alex Warzinski and Alexis Johnson to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew begins trenching and piping ASWs west of LOX area and running to approximate area of where manifold group Z4 will be placed.

DMS and Angelo Ippilito (AI) layout and mark area where manifold group Z4 will be placed.

12:00 Break for lunch.

12:45 All personnel return from lunch.

Continue trenching and piping ASWs west of LOX are.

DMS and AI begin marking five pads for manifold group Z4 and marking with stakes and string line.

Pipe installation and wellheads completed for ASWs 247, 248, 249, 268, 269, 270, 271, 272, 273, 274, and 276.

16:00 Cleanup and secure site for departure.

16:30 All personnel depart site.

No photos taken today.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), Groundwater Protection (GPI), FECC		
WEATHER: 44º - 69º Clear, wind 11 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Warzinski	Geosyntec	Engineer
Alexis Johnson	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 DMS arrives on site, conducts tailgate meeting with drillers and Geosyntec. Alex Warzinski and Alexis Johnson to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC prepare for pressure test for piping west of LOX sphere.

Continue forming for well pads.

11:30 All personnel depart site due to static fire test scheduled for LC39A.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC complete preliminary pressure tests on ASWs 247, 248, 249, 268, 269, 270, 271, 272, 273, 274, 276 – applied 60 psi to each line for ~15 minutes (all passed).

Connecting ASW piping to manifold box framing.

16:00 Clean up and secure site.

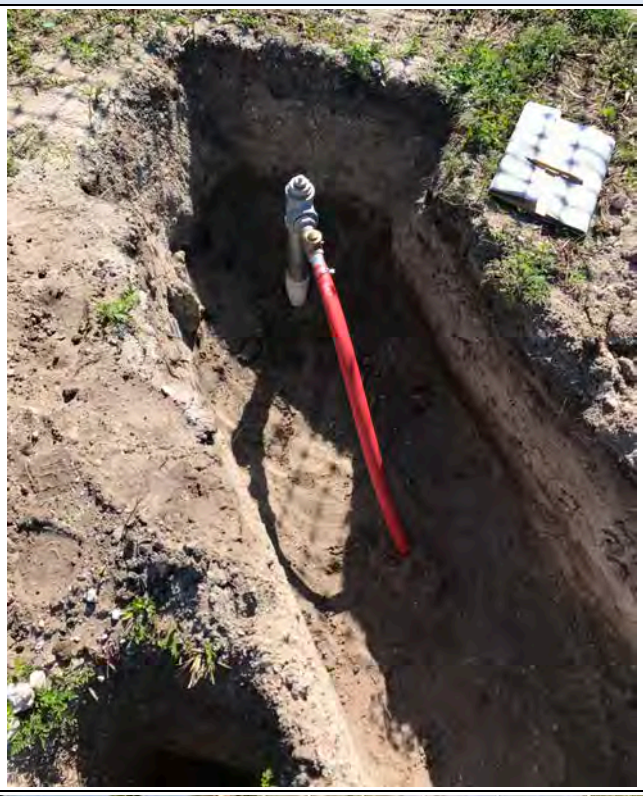
16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: NA Description: View of completed galvanized wellhead completion, prior to well pad being installed.	
Photograph No. 2 Direction: Southwest Description: View of completed galvanized wellhead completion, prior to well pad being installed.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 66º - 77º Clear, wind 14 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Ben Coppenger	Geosyntec	Scientist
Jake Crum	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS and FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities. Ben Coppenger and Jake Crum to provide drilling oversight.

FECC crew begins trenching from manifold Z4 to perimeter fence for ASWs outside fence.

7:45 DMS attends pad ops meeting.

8:00 DMS back on site.

8:30 Geosyntec personnel and GPI are on site. DMS conducts tailgate meeting.

FECC continues trenching and backfilling piping installed last week.

9:00 NASA utility locator on site – clears final drilling locations.

10:30 NASA utility locator off site.

12:00 All personnel break for lunch.

12:45 Return from lunch.

FECC continues trench and backfilling installed piping.

16:00 Clean up and secure site.

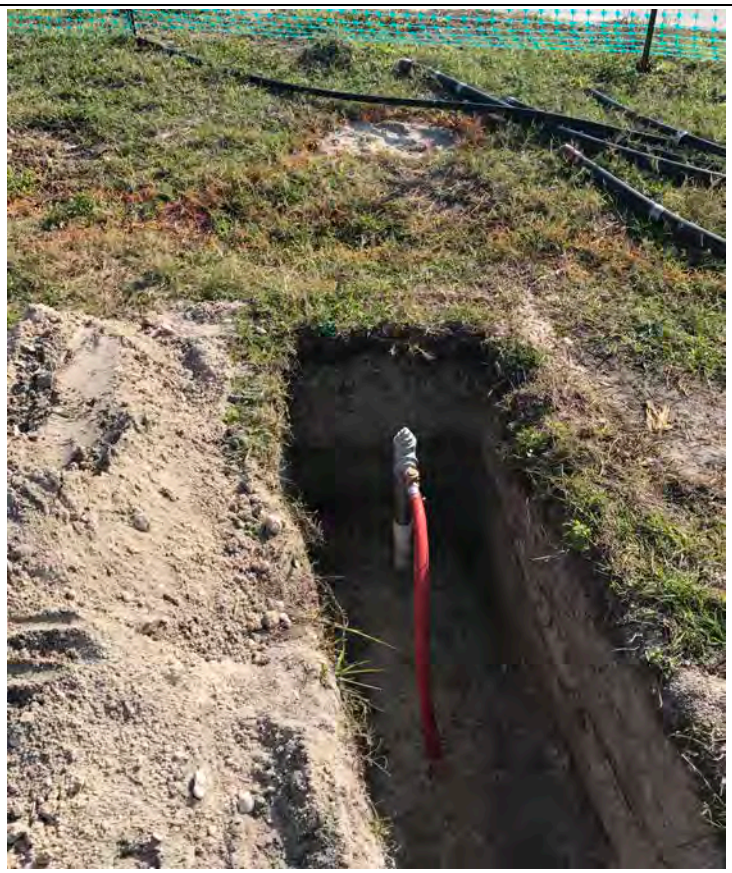
16:30 FECC and DMS depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Northeast Description: View of backfilling trench.	
Photograph No. 2 Direction: NA Description: View of completed galvanized wellhead that is to be direct buried.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 57º - 78º Clear, wind 13 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Ben Coppenger	Geosyntec	Scientist
Jake Crum	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 Geosyntec personnel and GPI are on site. DMS conducts tailgate meeting. Ben Coppenger and Jake Crum to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew begins installing piping from ASWs off site to Z4 manifold group. Pipe placed at land surface and will be buried at a later date.

7:45 DMS attends pad ops meeting.

8:00 DMS back on site.

FECC continue installing pipe off site and begin setting metal framing (Unistrut) where manifold boxes will be installed. String line and survey equipment are being used to ensure metal frame is set level and square.

12:00 All personnel break for lunch.

12:45 Return from lunch.

FECC crew continues installing pipe off site and setting metal framing.

16:00 Clean up and secure site.

16:30 FECC and DMS depart site.

No photos taken.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 62º - 81º Clear, wind 18 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Ben Coppenger	Geosyntec	Scientist
Jake Crum	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
Eric Sager	Geosyntec
Kevin Warner	Geosyntec
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 Geosyntec personnel and GPI are on site. DMS conducts tailgate meeting. Ben Coppenger and Jake Crum to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew resumes installing piping from ASWs offsite to Z4 manifold group and resumes setting metal framing to support ASWs to be tied-in to manifolds.

FECC crew also begins digging out around off site wells for subsequent wellhead completion.

7:45 DMS attends pad ops meeting.

8:00 DMS back on site.

FECC continue installing pipe off site and begin setting metal framing (Unistrut) where manifold boxes will be installed. String line and survey equipment are being used to ensure metal frame is set level and square.

9:30 Eric Sager and Kevin Warner of Geosyntec arrive on site. Mike Deliz of NASA arrives on site. Discuss upcoming electrical hookup. If possible, electrical hookup will occur on February 27th as originally scheduled.

10:30 Mike Deliz departs site.

10:45 Eric Sager and Kevin Warner depart site.

12:00 All personnel break for lunch.

12:45 Return from lunch.

FECC crew continues setting metal framing and installing piping.

16:00 Clean up and secure site.

16:30 FECC and DMS depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

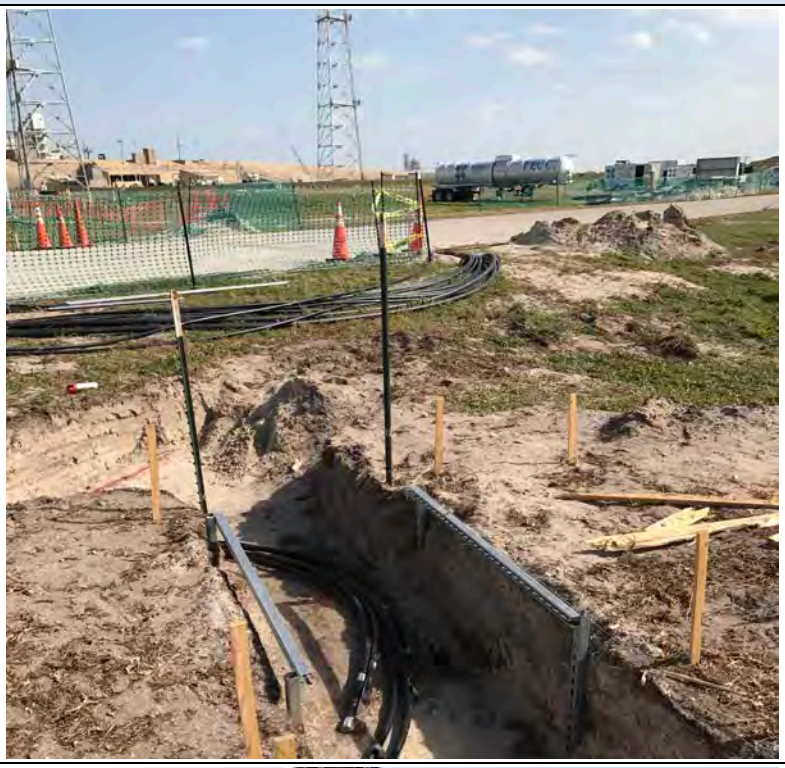
Photograph No. 1 Direction: Northwest Description: View of proposed manifold Z4 location.	
Photograph No. 2 Direction: North Description: View of pipe network to be tied in to manifold Z4.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: East Description: View of piping going to proposed manifold Z4.	
Photograph No. 4 Direction: West Description: View of piping tied into Unistrut.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC, Mil-Con		
WEATHER: 46º - 68º Clear, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Ben Coppenger	Geosyntec	Scientist
Jake Crum	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator
Lane Elder	Mil-Con	Electrician

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 Geosyntec personnel and GPI are on site. DMS conducts tailgate meeting. Ben Coppenger and Jake Crum to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew continues setting metal framing.

Lane Elder of Mil-Con on site to install main disconnect box.

8:00 Mike Deliz on site.

8:45 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:45 Return from lunch.

FECC begins connecting ASW piping to metal framing.

FECC crew continues setting metal framing and installing piping.

Electrician continues setting main disconnect box.

16:00 Clean up and secure site.

16:30 FECC and DMS depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: West Description: View of trenching from manifold Z4 to pad fence towards the off-site wells.	
Photograph No. 2 Direction: West Description: View of trenching for pipe to manifold Z4 area.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC, Mil-Con		
WEATHER: 44º - 75º Clear, wind 7 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Ben Coppenger	Geosyntec	Scientist
Jake Crum	Geosyntec	Engineer
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Eric Sager	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 Geosyntec personnel and GPI are on site. DMS conducts tailgate meeting. Ben Coppenger and Jake Crum to provide drilling oversight.

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

FECC crew continues setting metal framing and installing piping.

8:30 Eric Sager of Geosyntec arrives on site; Mike Deliz of NASA arrives on site – discuss electrical hookup on February 27, also discuss no dig policy. It is determined that dig permit is a Category III meaning less strict no dig policy. It is okay to dig today.

9:10 Mike Deliz departs site.

11:00 Eric Sager departs site.

12:00 All personnel break for lunch.

12:45 Return from lunch.

FECC begins connecting ASW piping to metal framing.

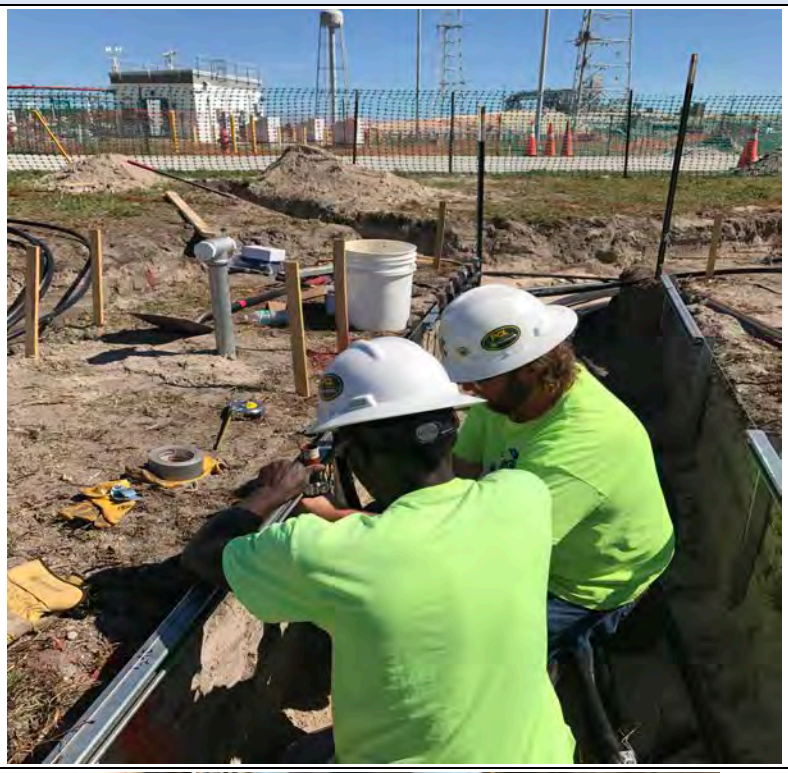
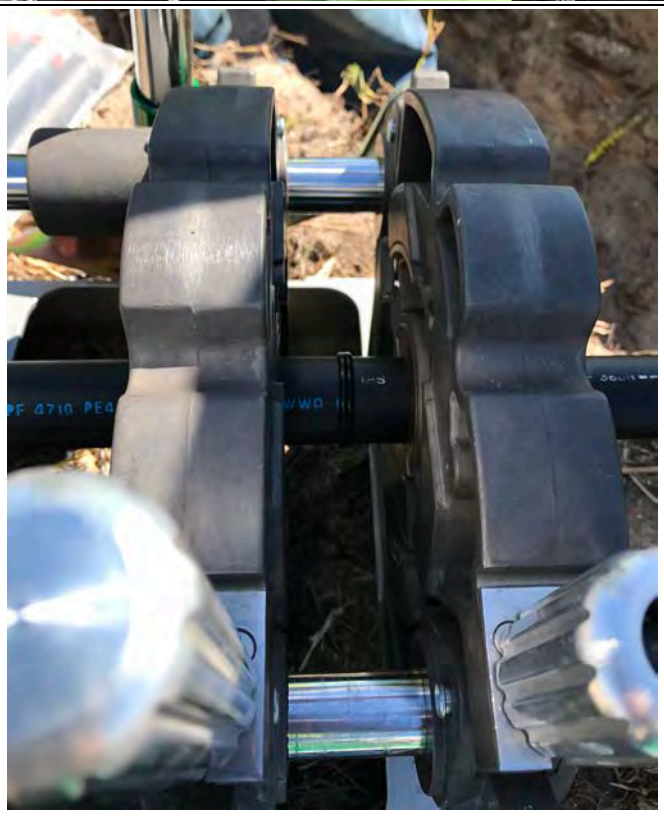
FECC crew continues setting metal framing and installing piping.

15:00 Clean up and secure site.

15:30 FECC and DMS depart site.

PROJECT AND SITE INFORMATION		
PROJECT: Launch Complex 39B	**DATE:** 2/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: East Description: View of piping being connected to metal framing (Unistrut).	
Photograph No. 2 Direction: NA Description: View of 1” HDPE pipe being welded together.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC, Mil-Con		
WEATHER: 44º - 75º Clear, wind 7 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator
Lane Elder	Mil-Con	Electrician

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew resumes backfilling trenches leading to Z4 manifold group and connecting ASW pipe to Unistrut.

Electrician begins installing electrical meter to main disconnect box.

12:00 All personnel break for lunch.

12:45 Return from lunch.

FECC crew continues backfilling trenches leading to Z4 manifold group and connecting ASW pipe to Unistrut.

Preliminary pressure tests completed on all piping to be used for all off-site ASWs. Approximately 3,500′ (seven 500’ rolls) of 1” HDPE held 60 psi for >15 minutes – all passed.

Electrician continues installing electrical meter to main disconnect box and putting together conduit that will later be installing on Electrical Equipment (EE) building wall.

16:00 Electrician departs site. FECC begins cleaning up and securing site.

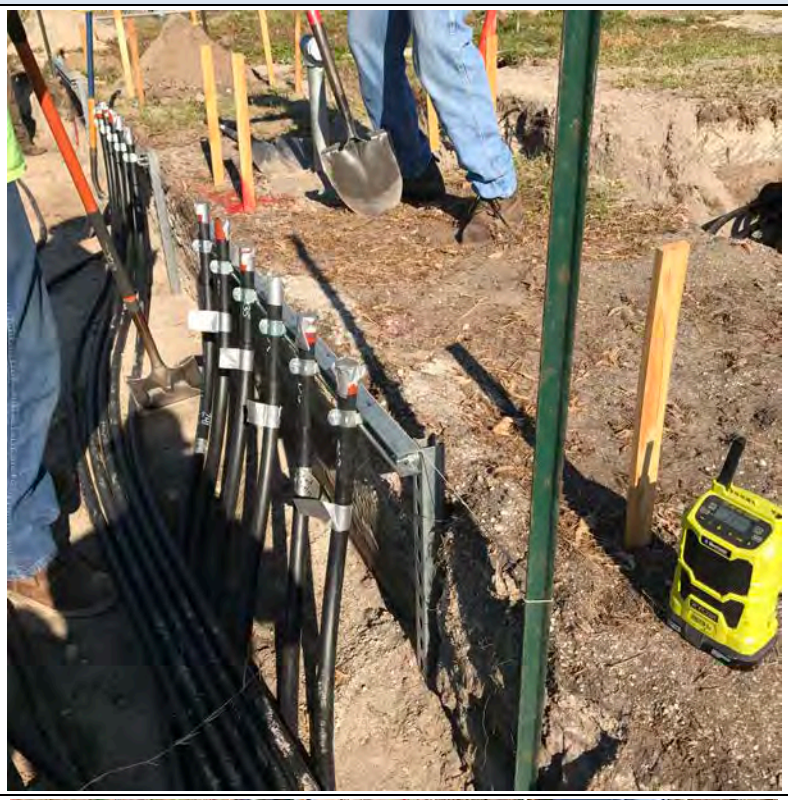
16:30 FECC and DMS depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: N/A Description: 1″ HDPE pipes (for individual ASWs) connected to Unistrut at Z4 manifold group.	
Photograph No. 2 Direction: N/A Description: Installing 2″ HDPE pipe (Z4-L2) that will connect the Z4 manifold group to the air compressor system.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: Northwest Description: Trenching up to the fence line.	
Photograph No. 4 Direction: N/A Description: Galvanized 2″ pipe stubbing up from below grade for the Z4 manifold group.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC, Mil-Con		
WEATHER: 56º - 75º Clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator
Lane Elder	Mil-Con	Electrician

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew resumes backfilling trenches leading to Z4 manifold group and connecting ASW pipe to Unistrut.

Electrician begins installing electrical conduit up outside wall of Electrical Equipment (EE) building and installing a LB Conduit Box on the exterior of the EE building where the perforation takes place.

12:00 All personnel break for lunch.

12:45 Return from lunch.

FECC crew continues backfilling trenches leading to Z4 manifold group and connecting ASW pipe to Unistrut.

Electrician continues installing conduit on outside wall of EE building.

14:00 Mob equipment, material and personnel off site to ASWs outside perimeter fence. Trenching and preparing wells for wellhead construction.

15:00 Electrician departs site. FECC begins cleaning up and securing site.

16:30 FECC and DMS depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Southeast

Description: Backfilling trenches for the Z4 manifold group.



Photograph No. 2

Direction: Northwest

Description: Backfilling trenches for the Z4 manifold group and laying marking tape in partially filled trench.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: North Description: Trenches for the Z4 manifold group after they had been backfilled	
Photograph No. 4 Direction: N/A Description: LB Conduit Box installed on the side of the EE Building.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC, Mil-Con		
WEATHER: 56º - 74º Heavy Rain, wind 15 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Shane Bocco	FECC	Foreman
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator
Lane Elder	Mil-Con	Electrician

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 FECC arrives on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continue trenching and preparing wells for wellhead construction.

12:00 Begin heavy rain – too wet to continue field activities without rutting up area.

12:30 All personnel departs site.

No photos taken.

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DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC, Mil-Con		
WEATHER: 65º - 77º Clear, wind 7 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
John Livingston	FECC	Operator
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Land Elder	Mil-Con	Electrician
Larry Mazes	Mil-Con	Electrician
Jason Paplardo	Mil-Con	Electrician

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Electrical wire	Not recorded	4/0 gauge

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives site, FECC and Mil-Con crew arrives on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC Continue trenching and piping from ASWs outside perimeter fence Z4 manifold groups.

Mil-Con electrician pulling wire from electrical disconnect box to LB box on outside of EE building.

8:00 Mike Deliz on site.

9:10 Mike Deliz off site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC continues trenching and piping from ASWs outside perimeter fence Z4 manifold groups.

Mil-Con electricians continue pulling wire from electrical disconnect box to LB box on outside of EE building.

16:00 Mil-Con finished pulling wire from disconnect box to LB box on outside of EE building – ready for power outage and connection to electrical breaker box inside EE building.

Mil-Con clean up and secure area for departure.

16:10 Mil-Con departs site.

FECC crew begins cleaning up and securing site.

16:30 All personnel depart site.

.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Southwest Description: Trench for ASW outside of pad fence full of water from heavy rains on 22 February 2017.	
Photograph No. 2 Direction: North Description: Wire spool used to connect the main disconnect to the power source within the EE building.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: North Description: Wire spools used to connect the main disconnect to the power source within the EE building.	
Photograph No. 4 Direction: N/A Description: Main disconnect being wired by electricians for the AS trailer.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC,		
WEATHER: 64º - 78º Clear, wind 5 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Joe Bartlett	Geosyntec	Engineer
Trent Thomas	FECC	Foreman
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site. FECC crew arrives on site. DMS conducts tailgate meeting and discusses daily activities.

7:30 FECC crew continues trenching, piping and preparing wells for wellhead construction outside perimeter fence.

8:00 Mike Deliz on site.

8:10 Mike Deliz departs site.

11:00 DMS departs site; Joe Bartlett of Geosyntec provides oversight.

Notes from Joe Bartlett:

11:00 Joe Bartlett informs Eric Sager of site personnel change.

12:00 All personnel break for lunch.

13:00 All personnel return from lunch.

Continue trenching, piping and preparing wells for wellhead construction outside construction fence.

Joe Bartlett observes an un-abandoned injection well in trench near ASW-253 and recommends well be abandoned before backfilling trench. No injection wells abandoned.

15:10 FECC crew begins cleaning up and securing site for departure.

15:40 All personnel departs site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Southwest Description: Trenching area outside of pad fence for ASW installation. ASW top of casing visible.	
Photograph No. 2 Direction: North Description: Construction fence visible around active work area outside of pad fence.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: North

Description: Completed wellhead for ASW-267 prior to connecting it to the HDPE piping infrastructure. The wellhead is PVC and will be buried.



Photograph No. 4

Direction: West

Description: Metallic marking stakes installed at the location of direct buried ASWs outside the pad fence. These were later removed.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC, Mil-Con		
WEATHER: 64º - 79º Clear, wind 7 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Trent Thomas	FECC	Foreman
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Brandon Paul	FECC	Tech
Land Elder	Mil-Con	Electrician
Jason Paplardo	Mil-Con	Electrician

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
ISC Group	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew Mil-Con crew arrives on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues trenching, piping and preparing wells for wellhead construction outside perimeter fence.

Mil-Con Crew making last minute preparations for power outage and waiting on ISC to initiate the power outage.

8:00 Mike Deliz on site.

9:20 ISC on site and shuts down electrical service to EE building.

9:40 Electrical service has been shut down. Mil-Con confirms that electrical service is off in breaker box to which new electrical line will be connected, using electrical multimeter. It is confirmed that electrical service is off.

9:45 Mil-Con begins connecting electrical line to breaker box.

10:15 Mike Deliz departs site.

11:00 Electrical line connection is complete; Mil-Con locks-out/tags-out breaker for newly install line and main disconnect to proposed AS treatment system.

11:30 ISC has restored electrical service to EE building.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Mil-Con crew cleans up and secure area for departure.

13:00 All of Mil-Con's material, vehicles, trailers and equipment transported off site. Mil-Con departs site.

FECC crew continues trenching, piping and building wellheads outside perimeter fence.

16:30 Clean up and secure site for departure.

Trenching, piping and wellhead completed.

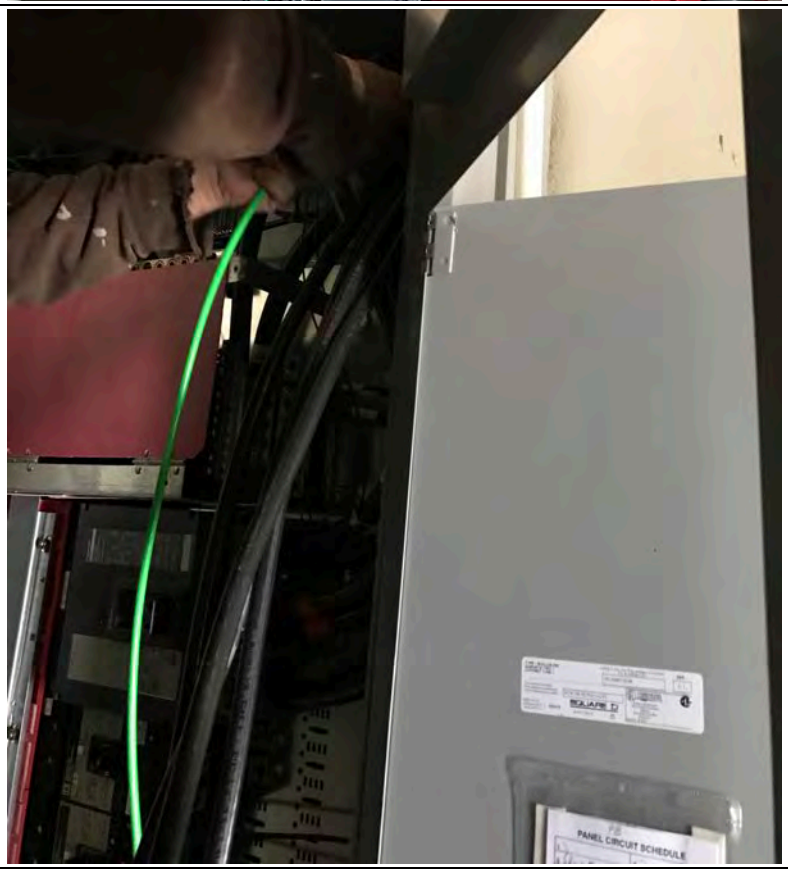
16:40 All personnel departs site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

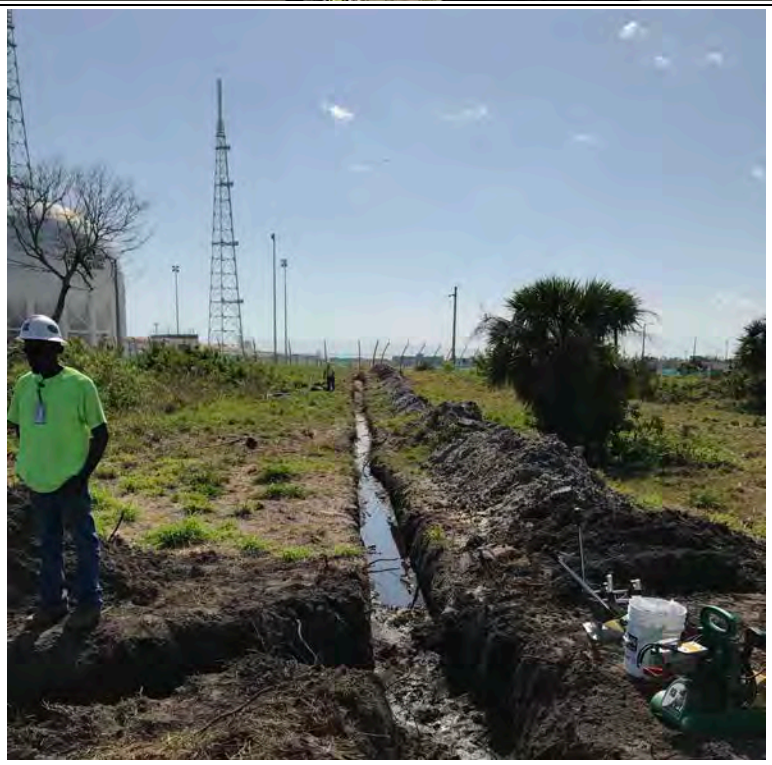
Photograph No. 1 Direction: NA Description: View of LB box toing through top of breaker box.	
Photograph No. 2 Direction: NA Description: View of electrician pulling wire to breaker box.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: NA Description: View of lock-out tag-out for electrical line to AS Trailer main disconnect.	
Photograph No. 4 Direction: East Description: View of rainwater collected in trench outside of Pad area.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 62º - 82º Clear, wind 5 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Brandon Paul	FECC	Tech
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues pipe installation from offsite ASWs to manifold Z4.

NOTE: ASW-234, 235, 236, 237, 238, 239, 240, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266 and 268 wellhead were completed yesterday.

8:00 Mike Deliz on site.

8:25 Mike Deliz departs site.

Begin potholing area between cable tray and LOX line.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC crew finishes pipe installation from off-site ASWs and begins backfilling trenches.

DMS continues to collect coordinates for Z4 manifold trenches.

16:30 Clean up and secure site for departure.

16:40 All personnel departs site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Northwest

Description: View of backfilled trench outside of the Pad area.



Photograph No. 2

Direction: North

Description: View of PVC wellhead and ASW piping placed in trench, prior to backfilling.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 2/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: North Description: View of trench to ASW.	
Photograph No. 4 Direction: West Description: View of PVC wellhead and HDPE pipe placed in trench, prior to connection.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 62º - 82º Clear, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Brandon Paul	FECC	Tech
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continue pipe installation from offsite ASWs to Z4 manifold group.

8:20 Mike Deliz on site.

8:30 Mike Deliz departs site.

DMS collects GPS coordinates for all ASWs and trenches for Z4 manifold group.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch – continue work from morning.

16:30 Clean up and secure site for departure.

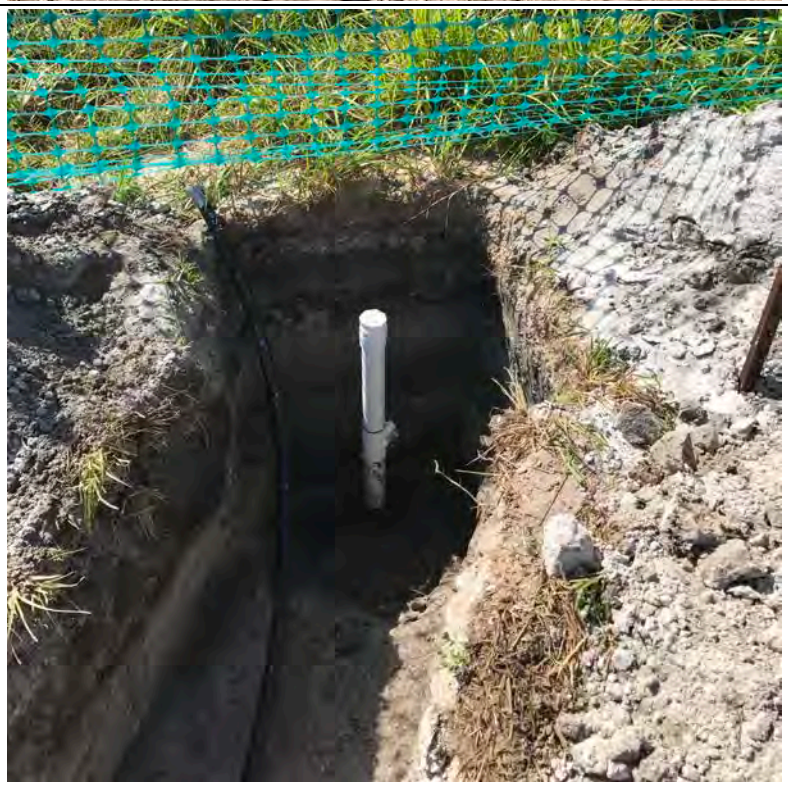
16:40 All personnel departs site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: North Description: View of backfilling activities outside fenced area.	
Photograph No. 2 Direction: North Description: View of PVC wellhead in trench ready to be connected to HDPE pipe.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: North Description: View of PVC wellhead in trench ready to be connected to HDPE pipe.	
Photograph No. 4 Direction: West Description: View of PVC wellhead in trench.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 64º - 84º Clear, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Brandon Paul	FECC	Tech
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
Eric Sager	Geosyntec
Jeff McDowell, Utility Locator	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew and DMS layout configuration for Z1A manifold group and distribution line from proposed AS system.

9:10 Eric Sager arrives site.

NASA utility locator on site to clear area of distribution line.

11:10 NASA utility locator departs site.

11:30 Eric Sager departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC crew begins potholing along layout of distribution line to Z1A manifold group, forming pads for Z4 manifold group and backfilling trenches outside perimeter fence.

DMS conducts a trial pressure test on ASW7 and piping to establish methodology for future preliminary.

15:00 Clean up and secure site for departure.

15:40 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: NA Description: View of ASW7 after conducting a trial pressure test. The PVC plug on the top of the ASW wellhead is removed in the photograph.	
Photograph No. 2 Direction: NA Description: View of PVC ASW wellhead in trench.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 61º - 71º Clear, wind 12 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Brandon Paul	FECC	Tech
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
Jeff McDowell, Utility Locator	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues potholing along layout of distribution line to Z1A manifold group, forming for pads for Z4 manifold group and backfilling trenches outside perimeter fence.

DMS preforms final pressure test on all ASWs piped to manifold group Z4 by applying 60 psi to each line and ensuring pressure dropped to approximately 20-30 psi (indicating that pressure overcomes head pressure). Wellhead fittings are sprayed with soapy water to check for leaks. No leaks are found, and all pressure held steady indicating that sparging was occurring. Where possible, surrounding wells were used to check radius of influence (ROI). ROI of ranged approximately 40' to 50'.

NASA utility locator on site to clear area of distribution line.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC crew continues potholing along layout of distribution line, forming pads for Z4 manifold group and backfilling trenches outside perimeter fence.

15:00 Clean up and secure site for departure. Finished forming pads for ZA4 manifold group.

15:40 All personnel departs site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: East Description: View of FECC crew potholing to clear utilities.	
Photograph No. 2 Direction: East Description: View of FECC crew potholing to clear utilities.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: East Description: View of form placement for Z4 manifold group.	
Photograph No. 4 Direction: South Description: View of backfilling between Unistrut used to support individual 1″ HDPE pipe.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 66º - 74º Clear, wind 12 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Brandon Paul	FECC	Tech
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew potholing utilities for ASWs for manifold group Z1A, continue backfilling trenches outside perimeter fence and emptying soil and groundwater IDW drum into roll-off and water tanker.

8:00 Mike Deliz on site.

8:45 Mike Deliz off site.

11:30 Empting IDW drums complete.

12:00 Break for lunch.

12:45 Return from lunch.

FECC crew continues potholing utilities for ASWs for manifold group Z1A and backfilling trenches outside perimeter fence.

DMS moves emptied IDW drums to drum staging area and placing on spill pallets.

15:00 Staging emptied drums complete, need to get “EMPTY” labels to place on drums.

16:00 Clean up and secure site for departure.

16:30 All personnel depart site.

No photos taken today.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FEC Corporation (FECC)		
WEATHER: 65º - 75º Clear, wind 12 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Brandon Paul	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues potholing utilities for ASWs to be connected to manifold group Z1A, placing pin flags to mark utilities across construction area, backfilling trenches outside perimeter fence and performing pressure tests on first 4" HDPE pipe running from proposed AS trailer to ventilation tunnel.

8:00 Mike Deliz on site.

9:10 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:30 All personnel return from lunch.

Continue potholing utilities for ASWs to be connected to manifold group Z1A, placing pin flags to mark utilities across construction area, backfilling trenches outside perimeter fence and performing pressure tests on first 4" HDPE pipe running from proposed AS trailer to ventilation tunnel.

16:00 Clean up and secure site.

Pressure test on first 4" pipe passed – held 60 psi for >1 hour.

16:35 All personnel departs site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: East Description: View of HDPE pipe being placed for manifold Z1A.	
Photograph No. 2 Direction: NA Description: View of potholing marked utilities by hand.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: West Description: View of trenching by hand to identify depth of marked utilities.	
Photograph No. 4 Direction: West Description: View of drums staged for pumping into IDW tanker.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 65º - 74º Clear, wind 11 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Brandon Paul	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues potholing utilities for ASWs in manifold group Z1A, placing pin flags, backfilling trenches outside perimeter fence, perform pressure test on second 4" HDPE pipe running from proposed AS trailer to ventilation tunnel and laying out trench lines for ASWs north of LOX line.

DMS collects IDW sample for second (final) soil roll off and tanker containing development water.

8:00 Mike Deliz on site.

9:00 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue potholing utilities for ASWs in manifold group Z1A, placing pin flags, backfilling trenches outside perimeter fence, perform pressure test on second 4" HDPE pipe running from proposed AS trailer to ventilation tunnel and laying out trench lines for ASWs north of LOX line.

16:00 Clean up and secure site for departure.

Pressure test for second 4" HDPE pipe passed – held 60 psi for >1 hour.

Finished backfilling trenches outside perimeter fence.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of 2" HDPE pipe being butt-fused together.



Photograph No. 2

Direction: North

Description: View of HDPE pipe being staged and lined up for prior to being fused together.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: North Description: View of 2" HDPE placed near the trenching area.	
Photograph No. 4 Direction: NA Description: View of typical form and manhole placement for ASW well pads, prior to completion.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 63º - 79º Clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Brandon Paul	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Jeff McDowell, Utility Locator	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:00 DMS freshen ice on IDW samples collected yesterday and package for shipment to lab.

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues potholing utilities for ASWs in manifold group Z1A, placing pin flags, performing pressure test on third 4" HDPE pipe running from proposed AS trailer to ventilation tunnel and laying out location for manifold group Z1A.

8:00 Mike Deliz on site.

9:00 Mike Deliz departs site.

NASA utility locator on site and confirmed that approval is granted for trenching between cable tray and LOX line, and north of LOX line.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue potholing utilities for ASWs in manifold group Z1A, placing pin flags, performing pressure test on third 4" HDPE pipe running from proposed AS trailer to ventilation tunnel and laying out location for manifold group Z1A.

16:00 Clean up and secure site for departure.

Pressure test for third 4" HDPE pipe passed – held 60 psi for >1 hour.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Southwest

Description: View of FECC employees during tailgate safety meeting.



Photograph No. 2

Direction: West

Description: View of layout for manifold Z1A area.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: West Description: View of 4" HDPE pipe prior to trenching and placement in trench.	
Photograph No. 4 Direction: East Description: View of 4" HDPE pipe extending towards ventilation tunnel.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 60º - 82º Clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues potholing utilities for ASWs in manifold group Z1A, placing pin flags, performing pressure test on fourth 4" HDPE pipe running from proposed AS trailer to ventilation tunnel and laying out location for manifold group Z1A.

8:00 Mike Deliz on site.

9:00 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue potholing utilities for ASWs in manifold group Z1A, placing pin flags, performing pressure test on fourth 4" HDPE pipe running from proposed AS trailer to ventilation tunnel and laying out location for manifold group Z1A.

Perform pressure test on three 2" HDPE legs running from prosed AS trailer to manifold group Z1A held 60 psi for >1 hour.

16:00 Clean up and secure site for departure.

Pressure test for fourth 4" HDPE pipe passed – held 60 psi for >1 hour.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of pressure gauge temporarily installed on HDPE pipe for pressure testing.



Photograph No. 2

Direction: West

Description: View of construction of ASW well pad forms.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: South Description: View of hand-trenched ditch beneath cable tray.	
Photograph No. 4 Direction: South Description: View of hand-trenched ditch beneath cable tray.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 63º - 79º Clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues potholing utilities for ASWs in manifold group Z1A. Preform pressure tests on six 500-ft rolls of 2" HDPE pipe for legs running from AS trailer to manifold group Z2.

8:00 Mike Deliz on site.

9:00 Mike Deliz departs site.

DMS confirms pressure tests passed – held 60 psi for > 1 hour.

FECC begins trenching north of LOX line from ASW-5 to ASW-44; continue building additional wellheads and hand digging trenches for ASWs extending beneath cable trays and LOX line.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue trenching and building additional wellheads.

16:00 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Southwest

Description: View of hand clearing around ASWs and setting up for trenching.



Photograph No. 2

Direction: Southeast

Description: View of trenching north of LOX line.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: Southeast Description: View of trenching and spotter north of LOX line.	
Photograph No. 4 Direction: NA Description: View of trench to ASW.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 55º - 66º Clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC resumes potholing utilities, prefabricating additional wellheads and trenching ASWs north of LOX line.

8:00 Mike Deliz on site.

8:15 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue potholing, building wellheads and trenching.

16:00 Clean up and secure site for departure.

All trenching north of LOX line complete including ASW-5, 10, 16, 17, 44, 45, 46, 51, 52, 53, 55 and 56.

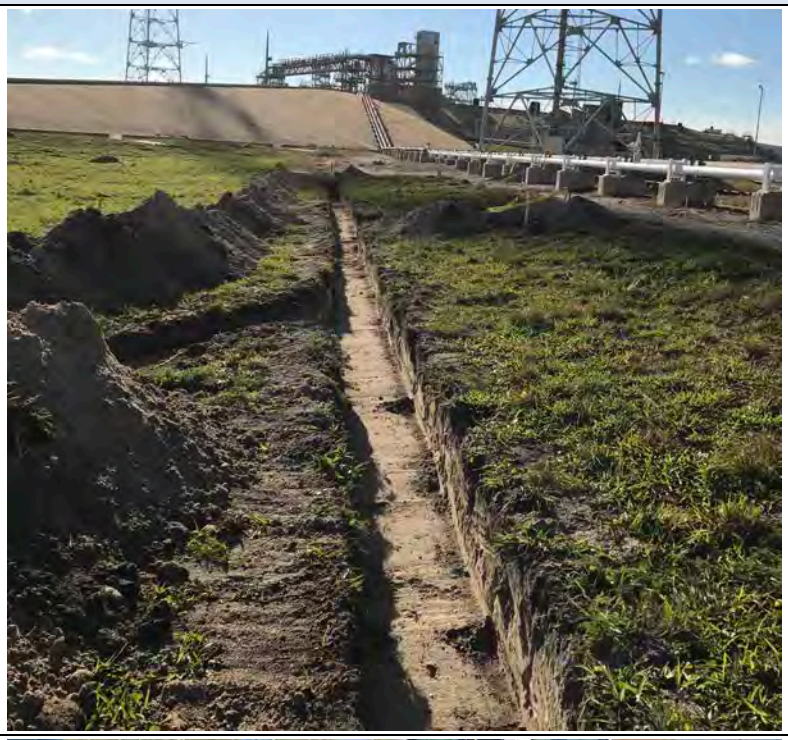
16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Southeast Description: View of trenches north of LOX line.	
Photograph No. 2 Direction: NA Description: View of wellhead construction prior to installation.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: NA Description: View of pre-fabricated galvanized wellheads.	
Photograph No. 4 Direction: Northeast Description: View of trench north of LOX line.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 44º - 53º Clear, wind 14 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continue potholing, building additional wellheads and begin trenching between cable tray and LOX line.

8:00 Mike Deliz on site.

8:30 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue potholing, building wellheads and trenching. Also begin preparing 4" HDPE pipe for off-site return shipment to vendor.

16:00 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Southwest Description: View of repacking of 4" HDPE pipe for return to vendor.	
Photograph No. 2 Direction: NA Description: View of 1" galvanized pipe being cut and threaded for construction of galvanized wellheads.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: Northeast Description: View of potholing and digging out area around ASWs.	
Photograph No. 4 Direction: Southeast Description: View of trenching and spotter between cable tray and LOX line.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 37º - 57º Clear, wind 13 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Jim Langenbach	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues potholing and digging out area around ASWs, trenching between cable tray and LOX line and building additional wellheads.

8:00 Mike Deliz on site.

8:30 Jim Langenbach on site.

9:00 Mike Deliz departs site.

10:30 Jim Langenbach departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch. Continue tasks from earlier in day.

16:00 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Southeast Description: View of Jim Langenbach discussing project with Angelo Ippollito.	
Photograph No. 2 Direction: West Description: View of trench-work between cable tray and LOX line.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: West Description: View of trench-work between cable tray and LOX line.	
Photograph No. 4 Direction: West Description: View of trench work between cable tray and LOX line.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 37º - 68º Clear, wind 19 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues potholing, trenching between cable tray and LOX line and building wellheads.

8:00 Mike Deliz on site.

9:15 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue potholing, trenching between cable tray and LOX line and building wellheads.

Lay-out location Z2 manifold group.

15:30 Clean up and secure site

16:00 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of trench work and marked utilities.



Photograph No. 2

Direction: West

Description: View of proposed trench from AS trailer to manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of completed PVC wellheads ready for installation.



Photograph No. 4

Direction: NA

Description: View of completed galvanized wellheads ready for installation.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 44º - 73º Clear, wind 7 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues potholing utilities and clearing around ASWs, building additional wellheads, leveling ruts caused by drilling activities (south of ventilation tunnel) and laying out three 2" HDPE pipes from AS trailer proposed location to manifold group Z1A.

8:00 Mike Deliz on site.

8:45 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue potholing and clearing around ASWs, building wellheads, leveling ruts and laying out 2" HDPE pipes.

Begin pressure testing six 500-ft rolls of 1" HDPE pipe to be used for ASW-5, 10, 16, 17, 44, 45, 46, 51, 52, 53, 55 and 56.

16:00 Clean up and secure site for departure.

DMS confirms that 3,000 ft of uninstalled, 1" HDPE passed preliminary pressure tests – held 60 psi for one hour.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Southwest Description: View of wellhead construction.	
Photograph No. 2 Direction: North Description: View of clearing around ASWs.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: West Description: View of 4" HDPE pipe being placed from the proposed area of AS Trailer to ventilation tunnel.	
Photograph No. 4 Direction: West Description: View of 2" HDPE pipe being placed from the proposed area of AS Trailer to ventilation tunnel.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 44º - 80º Clear, wind 5 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Jeff McDowell, Utility Locator	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues potholing and clearing around wellheads, building additional wellheads and begins piping and installing wellheads on ASWs north of LOX line.

8:00 Mike Deliz on site.

8:45 Mike Deliz departs site.

8:50 NASA utility locator on site locating and marking utilities between cable tray and ventilation tunnel.

10:45 NASA utility locator departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

NASA utility locator returns to site.

Continue potholing and clearing around ASWs, building addition wellheads and install piping/installing wellheads.

16:00 Clean up and secure site for departure.

Completed piping and wellhead construction for all wells north of LOX line including ASW-5, 10, 16, 17, 44, 45, 46, 51, 52, 53, 55 and 56.

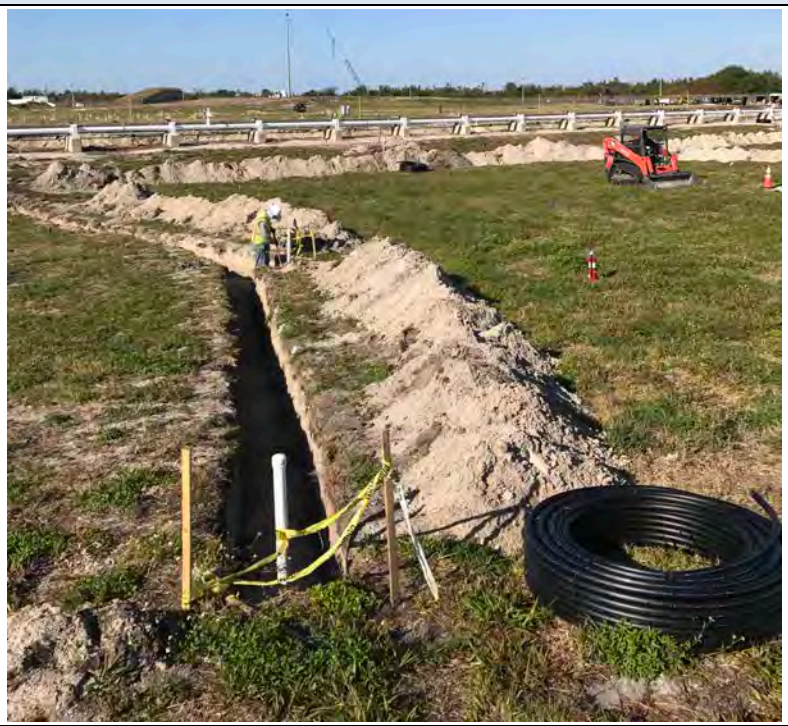
16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: South Description: View of HDPE piping installation north of LOX line.	
Photograph No. 2 Direction: NA Description: View of ASW cleared and ready for wellhead installation.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: West Description: View of HDPE piping installation north of ventilation tunnel.	
Photograph No. 4 Direction: East Description: View of HDPE pipe installation north of LOX line.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 55º - 87º Clear, wind 11 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Jeff McDowell, Utility Locator	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 Continue potholing and clearing around ASWs, begin piping and trenching between LOX line and cable trays, begin trenching a common trench for 4" and 2" HDPE air distribution lines that will serve manifolds Z1A and Z3, respectively (trench starts at the proposed location of AS trailer).

8:00 Mike Deliz on site.

9:10 Mike Deliz departs site.

NASA utility locator on site and confirmed that approval is granted for digging between cable trays and ventilation tunnel.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue potholing and clearing around wellheads, trenching and piping between LOX line and cable trays and for the air distribution lines.

Begin trenching from ASWs south of cable trays to manifold Z1A.

16:00 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: Northeast Description: View of trenches between LOX line and cable trays.	
Photograph No. 2 Direction: Southeast Description: View of trench from AS trailer to manifold groups Z1A/Z3.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: West Description: View of open trenches north and south of LOX line.	
Photograph No. 4 Direction: South Description: View of trenching from AS trailer to manifold group Z1A/Z3.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 64º - 73º heavy rain, lightning, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS and FECC crew arrive at Pad Ops office. Pad gate closed due to Phase II weather alert.

9:00 Due to heavy rain, it is determined that trenching and other site work should be postponed for the day. FECC departs site to restock material – paint, pen flags, and other miscellaneous supplies.

DMS remains at Pad gate.

10:30 Phase I, Pad gate is opened. DMS walks site to evaluate site conditions – standing water in trenches, some sloughing of trench walls, standing water in and around trench work.

11:30 DMS departs site to return to office to work on project documentation.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: East

Description: View of AS Leg trench to Z1A manifold group after rain.



Photograph No. 2

Direction: North

Description: View of ASW piping and trench to Z1A manifold group after rain.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: South Description: View of ASW trenched to Z1A manifold groupd after rain.	
Photograph No. 4 Direction: South Description: View of ASW trenched to Z1A manifold group after rain.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 66º - 75º Clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Fritz Nereus	FECC	Operator
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continue trenching from ASWs south of cable trays between cable trays and LOX line, potholing and installing pipe and wellheads between cable trays and LOX line.

Perform pressure test on three 500-ft rolls of 1" HDPE pipe for ASWs between cable tray and LOX line. DMS confirms that pipes held 60 psi of air for >15 minutes.

8:00 Mike Deliz on site.

8:10 Mike Deliz departs site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue trenching, potholing and installing pipe and wellheads.

16:00 Clean up and secure site for departure.

Pipe and wellhead installation completed for ASW-4, 9, 15, 42, 43, 49 and 50.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of trench between LOX line and cable tray.



Photograph No. 2

Direction: West

Description: View of trench work south of cable trays.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

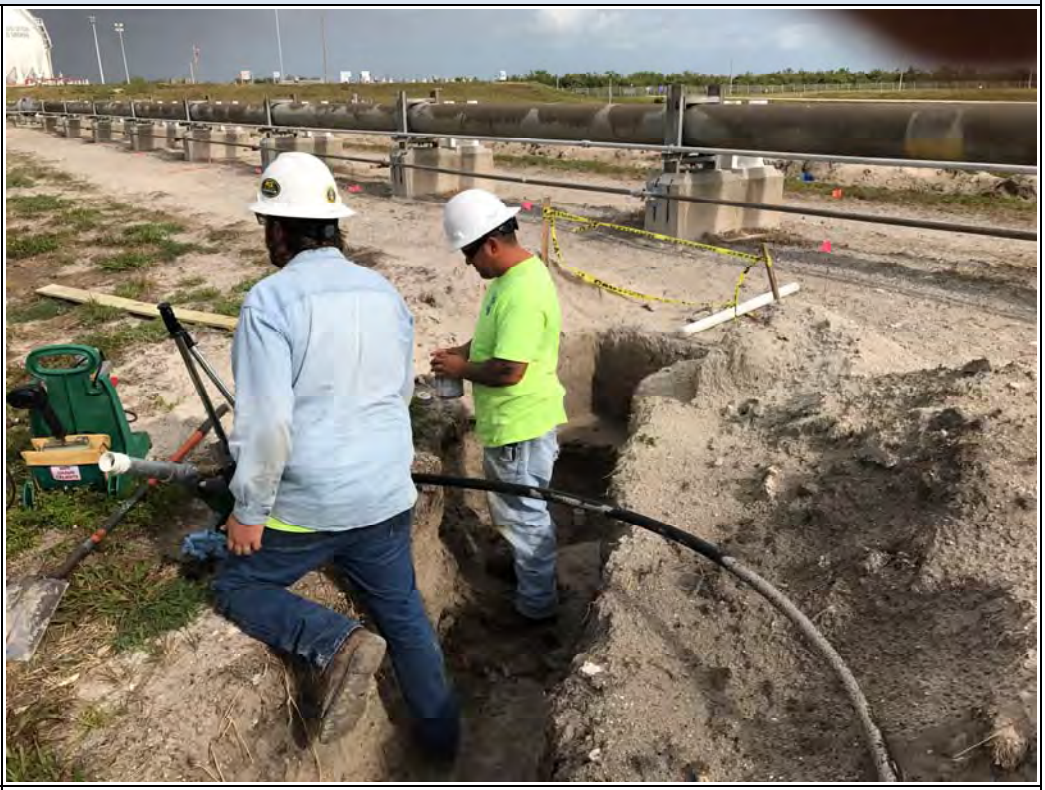
PROJECT: Launch Complex 39B	**DATE:** 3/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of pipe and wellhead installation by LOX line.



Photograph No. 4

Direction: West

Description: View of trench work south of cable tray.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 56º - 78º Clear, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues trenching ASWs between cable tray and ventilation tunnel and begin backfilling trenches north of LOX line.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue trenching ASWs between cable tray and ventilation tunnel and begin backfilling trenches north of LOX line.

16:00 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: West Description: View of backfilling activities north of LOX line.	
Photograph No. 2 Direction: West Description: View of backfilling activities north of LOX line.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of backfilling activities north of LOX line.



Photograph No. 4

Direction: East

Description: View of trenching ASWs south of cable tray.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 57º - 82º Clear, wind 2 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues trenching between cable tray and ventilation tunnel and backfilling north of LOX line.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue trenching between cable tray and ventilation tunnel, backfilling north of LOX line and preparing ASWs for wellhead installation.

16:00 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

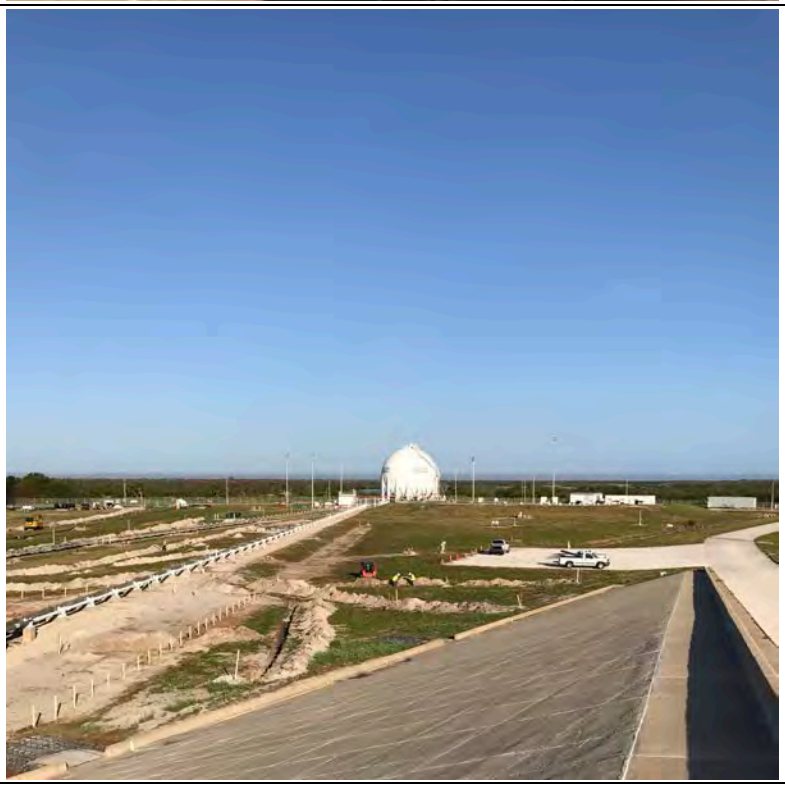
Photograph No. 1 Direction: West Description: View of backfilling activities north of LOX line.	
Photograph No. 2 Direction: West Description: View backfilling activities between cable tray and LOX line.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: West Description: View of backfilling and trenching activities from Launch Pad.	
Photograph No. 4 Direction: West Description: View of backfilling and trenching activities from Launch Pad.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/29/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 57º - 82º Clear, wind 2 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/29/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues trenching ASWs south of cable tray, backfilling north of LOX line and preparing to cross dirt road between cable tray and LOX line with trenching, pipe installation and backfilling.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue trenching ASWs south of cable tray, backfilling north of LOX line and preparing to cross dirt road between cable tray and LOX line with trenching, pipe installation and backfilling.

16:00 Clean up and secure site for departure.

Did not finish preparing to cross dirt road; will complete once HDPE pipe is pressure tested and welded.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/29/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of equipment used to prepare ASWs for wellhead placement.



Photograph No. 2

Direction: East

Description: View of trenching between cable tray and ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

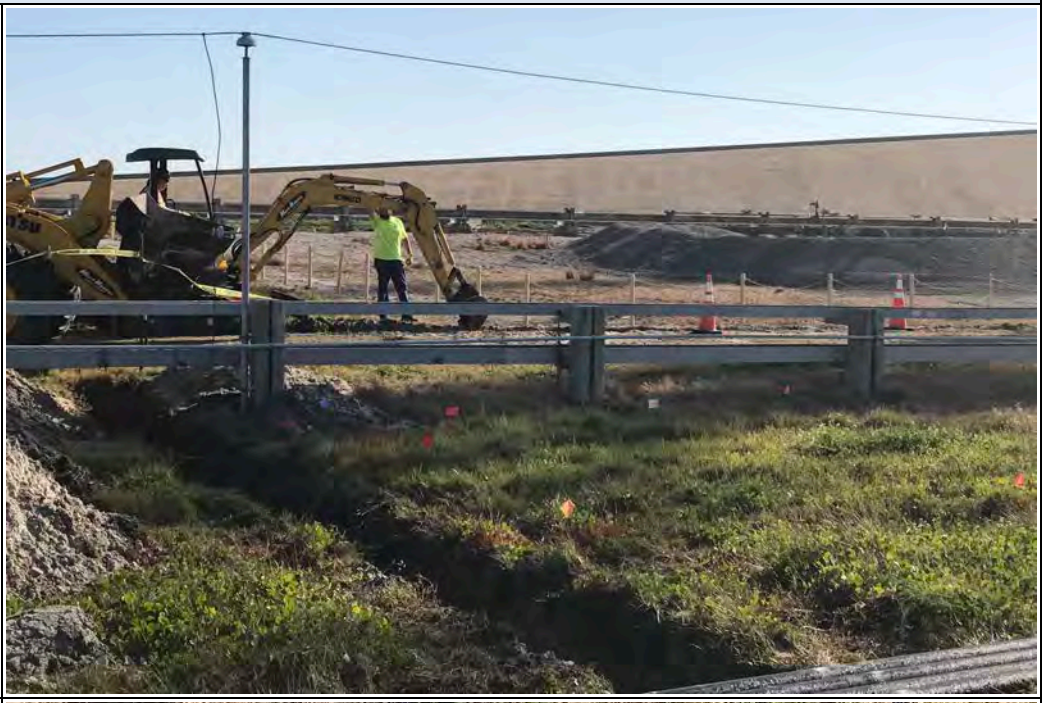
PROJECT: Launch Complex 39B	**DATE:** 3/29/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Northeast

Description: View of prep work to cross dirt road between cable tray and LOX line.



Photograph No. 4

Direction: NA

Description: View of wellhead placement and piping.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 64º - 84º Clear, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Eric Sager	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC begins installing wellheads on ASWs along cable tray, preforms preliminary tests on six 500-ft rolls of 1” HDPE pipe and continues trenching between cable tray and escape tunnel.

8:00 Eric Sager of Geosyntec is on site for site walk.

9:00 Eric Sager departs site.

Continue installing wellheads on ASWs along cable tray, preforming preliminary tests on six 500-ft rolls of 1” HDPE pipe and continue trenching between cable tray and escape tunnel.

Backfill trenches between cable tray and LOX line.

12:00 All six rolls of 1" HDPE pipe hold 60 psi of air pressure for >15 minutes. Installation of wellheads for ASW 1, 2, 3, 6, 7, 8, 11, 12, 13, 14, 20, 21, 22, 27, 28, 41, 48, 54, and 57 complete.

All personnel depart site for the day; DMS and Angelo depart site for meeting at Titusville office.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of 1" HDPE pipe prepared for pressure testing.



Photograph No. 2

Direction: NA

Description: View of 1" HDPE pipe being pressure tested.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: Northeast Description: View of 1" HDPE pipe (already welded) ready to install across dirt road between the cable trays and the LOX lines.	
Photograph No. 4 Direction: West Description: View of trench being backfilled and utility marking tape being installed.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 69º - 86º Clear, wind 12 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator

VISITOR'S NAME	COMPANY
Eric Sager	Geosyntec
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues backfilling and grading north of LOX line, final preparations for crossing dirt road between cable tray and LOX line, installing pipe to ASWs along cable tray and performing preliminary pressure test on four 500-ft rolls of 1” HDPE pipe.

8:00 Eric Sager and Mike Deliz on site for site walk.

9:00 Eric Sager and Mike Deliz depart site.

12:00 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling and grading north of LOX line, installing pipe to ASWs along cable tray and performing preliminary pressure test on four 500-ft rolls of 1” HDPE pipe.

Trench, install pipe, and backfill trench between cable tray and LOX line (across dirt road) without disruption of access to Tower #1 by maintenance personnel.

16:00 Clean up and secure site for departure.

Pipe installation for ASW 1, 2, 3, 6, 7, 8, 11, 12, 13, 14, 20, 21, 22, 27, 28, 41, 48, 54, and 57 complete.

All six rolls of 1" HDPE pipe held 60 psi of air pressure for >15 minutes.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of backfilling and grading north of LOX line.



Photograph No. 2

Direction: West

Description: View of backfilled and graded trenches north of LOX line.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 3/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of preliminary pressure test on 1” HDPE pipe.



Photograph No. 4

Direction: South

Description: View of backfilling of trench crossing dirt road between cable tray and LOX line.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 73º - 84º, clear, wind 12 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues trenching ASWs for manifold Z1A, backfilling ASWs between LOX line and cable trays and begins installing legs Z1A-L1, L2 & L3 and 4" HDPE pipe extending to ventilation tunnel.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue trenching ASWs for manifold Z1A, backfilling ASWs between LOX line and cable trays and begins installing legs Z1A-L1, L2 & L3 and 4" HDPE pipe extending to ventilation tunnel.

Layout and measure proposed location of 2" galvanized pipe to cross above-ground over ventilation tunnel.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: South

Description: View of trenching ASWs between cable tray and ventilation tunnel.



Photograph No. 2

Direction: West

Description: View of trench for AS legs from proposed AS trailer to Z1A manifold area.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

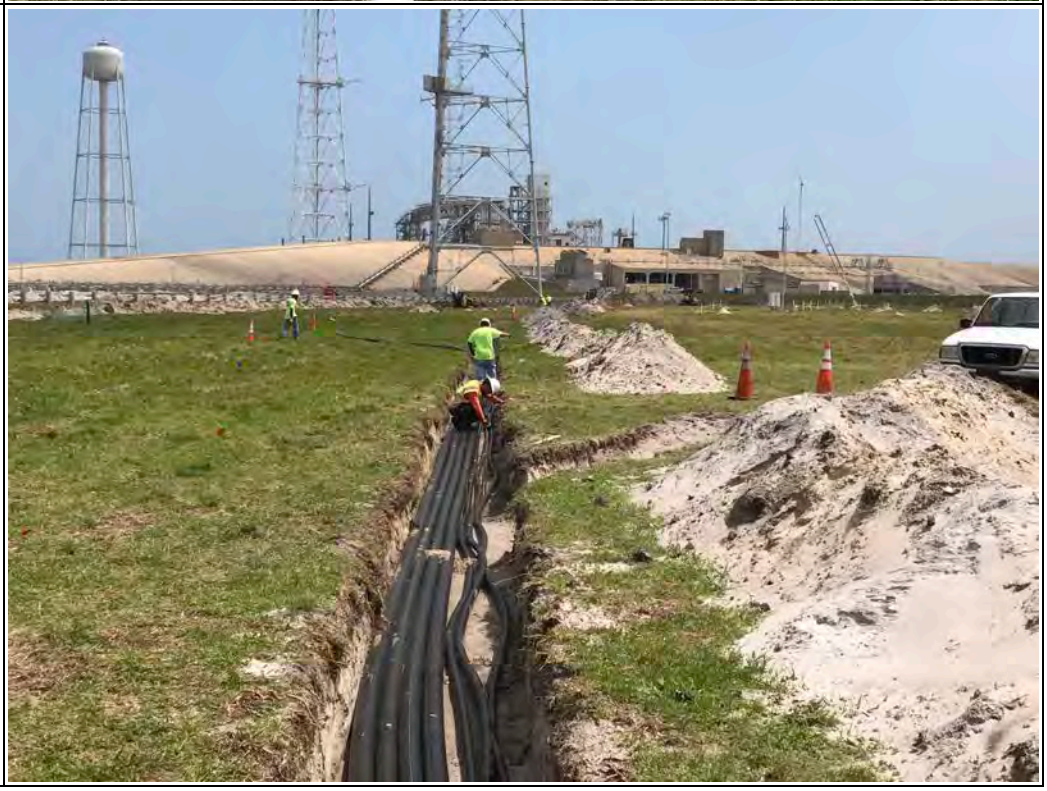
Description: View of ASW wellhead and pipe placement for manifold Z1A.



Photograph No. 4

Direction: East

Description: View of 4” and 2” HDPE pipe placement from proposed AS trailer location to manifold Z1A and Z3.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/4/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 69º - 81º, clear, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Alex Naster	FECC	Tech
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/4/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues trenching between cable tray and ventilation tunnel, installing 4” AS legs going towards the ventilation tunnel and 2” AS legs going to Z1A, continues building manifold boxes and cutting/threading 2” galvanized pipe for above-ground placement over ventilation tunnel and begin backfilling the trench containing 4” AS legs and 2” AS legs going to Z1A and towards the ventilation tunnel.

12:10 All personnel break for lunch.

12:40 All personnel return from lunch.

Continue trenching between cable tray and ventilation tunnel, installing 4” AS legs going towards the ventilation tunnel and 2” ASW going to Z1A, continue building manifold boxes and cutting/threading 2” galvanized pipe for above-ground placement over ventilation tunnel and backfilling trench containing 4” AS legs and 2” legs going to Z1A and towards the ventilation tunnel.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

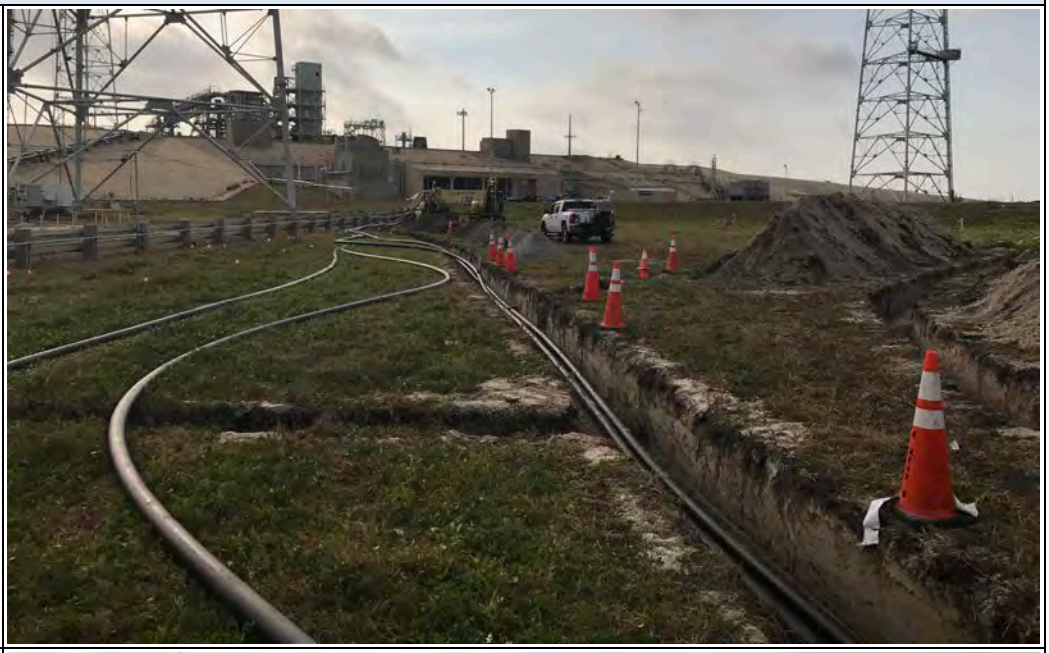
PROJECT: Launch Complex 39B	**DATE:** 4/4/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Southeast

Description: View of 4" HDPE placement in trenches.



Photograph No. 2

Direction: Northwest

Description: View of 4" HDPE pipe placement and welding in trench.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

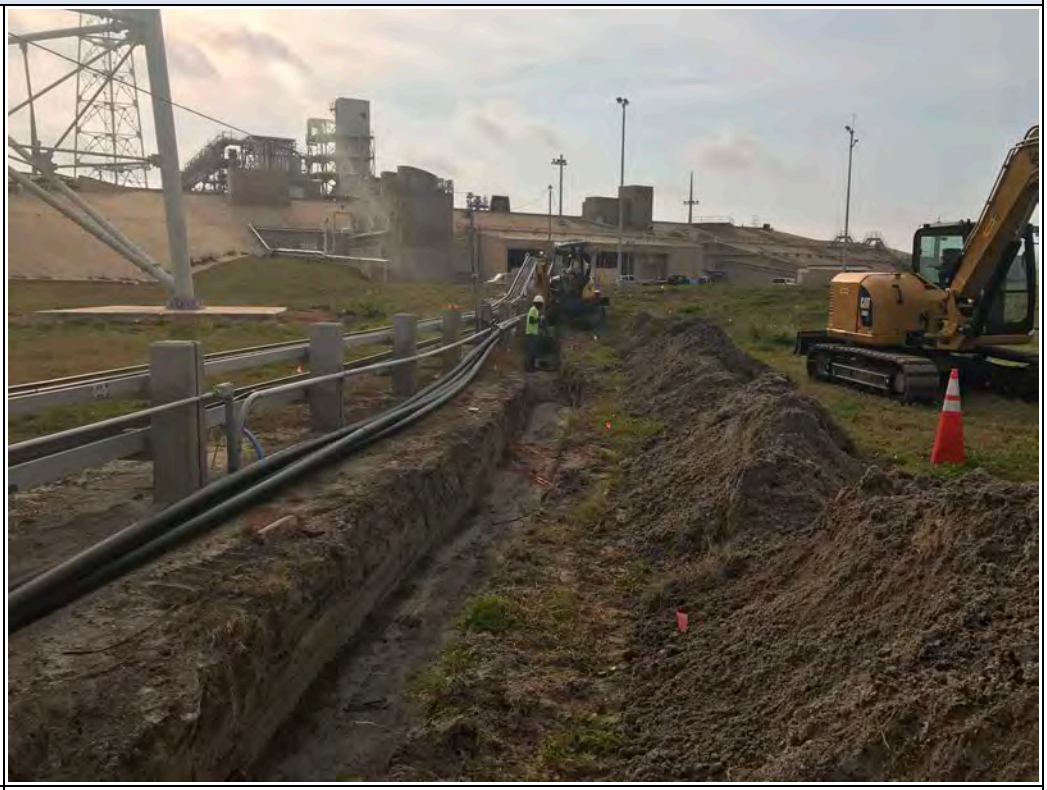
PROJECT: Launch Complex 39B	**DATE:** 4/4/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Southeast

Description: View of 4” HDPE pipe prepared for placement in trench.



Photograph No. 4

Direction: Northwest

Description: View of 4” and 2” HDPE pipe placement in trench.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 68º - 87º, clear, wind 17 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
Jim Langenbach	Geosyntec
Todd Hagenmayer	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues trenching between cable tray and ventilation tunnel, backfilling trench containing 4" and 2" HDPE AS legs to the ventilation tunnel or manifold Z1A, building manifold boxes, cutting/threading 2" galvanized pipe for installation above ground over ventilation tunnel, installing wellheads and piping for ASWs going to manifold Z1A, and performing pressure test on four 500-ft rolls of 1" HDPE pipe – held 60 psi for > 15 minutes.

11:40 Jim Langenbach and Todd Hagenmayer of Geosyntec on site to walk site.

12:15 Jim Langenbach and Todd Hagenmayer of Geosyntec depart site: All personnel break for lunch.

12:45 All personnel return from lunch.

FECC continues trenching between cable tray and ventilation tunnel, backfilling trench containing 4" and 2" HDPE AS legs to the ventilation tunnel or manifold Z1A, building manifold boxes, cutting/threading 2" galvanized pipe for installation above ground over ventilation tunnel, installing wellheads and piping for ASWs going to manifold Z1A, and performing pressure test on four 500-ft rolls of 1" HDPE pipe – held 60 psi for > 15 minutes.

Backfilling ASW trenches between cable tray and LOX line.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of butt fussing 1" HDPE pipe in trench.



Photograph No. 2

Direction: West

Description: View of trenching for individual ASWs in the Z1A area.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of trench for AS legs from proposed AS trailer to manifold Z1A area.



Photograph No. 4

Direction: West

Description: View of construction area from launch pad.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 62º - 84º, clear, wind 13 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues trenching between cable tray and ventilation tunnel, building manifold boxes, cutting/threading 2" galvanized pipe for installation above ground over ventilation tunnel, installing wellheads and piping for ASWs going to manifold Z1A, performing pressure test on eight 500-ft rolls of 1" HDPE pipe (held 60 psi for > 15 minutes), and backfilling trenches between cable tray and LOX line.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue trenching between cable tray and ventilation tunnel, building manifold boxes, cutting/threading 2" galvanized pipe for installation above ground over ventilation tunnel, installing wellheads and piping for ASWs going to manifold Z1A, performing pressure test on eight 500-ft rolls of 1" HDPE pipe (held 60 psi for > 15 minutes), and backfilling trenches between cable tray and LOX line.

Backfilling trench for 4" and 2" HDPE AS leg piping.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of placing metallic tape in partially backfilled trench for AS legs associated with manifold Z1A and area south of the ventilation tunnel. Phase towards proposed AS trailer location.



Photograph No. 2

Direction: West

Description: View of trenching for individual ASWs to manifold Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of construction area from launch pad.



Photograph No. 4

Direction: West.

Description: View of 1" HDPE pipe being pressure tested.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 55º - 73º, clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues trenching for ASWs to Z1A manifold group – includes ASWs 18, 19, 23-26, 29-40 and 58-63, building manifold boxes, cutting/threading 2" galvanized pipe for installation above ground over ventilation tunnel, installing wellheads and piping for ASWs going to manifold Z1A, performing pressure test on twelve 500-ft rolls of 1" HDPE pipe (held 60 psi for >15), trenching Z1A manifold box area and preparing for metal framing (Unistrut) installation to support manifold pipe, and finish backfilling trenches between cable tray and LOX line.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC continues trenching for ASWs to Z1A manifold group – includes ASWs 18, 19, 23-26, 29-40 and 58-63, building manifold boxes, cutting/threading 2" galvanized pipe for installation above ground over ventilation tunnel, installing wellheads and piping for ASWs going to manifold Z1A, performing pressure test on twelve 500-ft rolls of 1" HDPE pipe (held 60 psi for >15 minutes), completing preliminary pressure tests for ASWs 18, 19, 23-26, 29-40 and 58-63, trenching Z1A manifold box area and preparing for metal framing (Unistrut) installation to support manifold pipe, and finish backfilling trenches between cable tray and LOX line.

16:15 Clean up and secure site for departure.

Finished trenches for ASWs 18, 19, 23-26, 29-40 and 58-63.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of 500-ft roll of 1" HDPE pipe being pressure tested.



Photograph No. 2

Direction: East

Description: View of trench between proposed manifold boxes (Z1A).



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of pressure gauge fitting being welded on 1" HDPE pipe to be pressure tested.



Photograph No. 4

Direction: NA

Description: Zoomed in view of pressure test gauge used to pressure test 1" HDPE pipe.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 59º - 77º, clear, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman
Dave Longino	FECC	Laborer
Jared Link	FECC	Laborer
Thomas Watson	FECC	Laborer

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues building manifold boxes, cutting/threading 2" galvanized pipe for installation above ground over ventilation tunnel, installing wellheads and piping for ASWs going to manifold group Z1A, finish laying out proposed trenches for ASWs to Z2 manifold group, and begin metal framing (Unistrut) installation to support manifold pipe for manifold group Z1A.

8:00 Mike Deliz on site for site visit.

8:25 Mike Deliz departs site.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue building manifold boxes, cutting/threading 2" galvanized pipe for installation above ground over ventilation tunnel, installing wellheads and piping for ASWs going to manifold group Z1A, finish laying out proposed trenches for ASWs to Z2 manifold group, and metal framing (Unistrut) installation to support manifold pipe for manifold Z1A.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: East

Description: View of backfilled trench for AS Legs to manifold group Z1A and ventilation tunnel.



Photograph No. 2

Direction: NA

Description: View of typical ASW wellhead and piping completion.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of typical ASW wellhead and pipe placement for manifold Z1A.



Photograph No. 4

Direction: East

Description: View of FECC personnel laying out trenches for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/11/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 59º - 79º, clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman
Dave Longino	FECC	Laborer
Jared Link	FECC	Laborer
Thomas Watson	FECC	Laborer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/11/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues installing metal framing (Unistrut) to support manifold pipe for manifold group Z1A, installing wellheads and piping for ASWs 18, 19, 23-26, 29-40 and 58-63, begin backfilling trenches for ASWs to manifold Z1A group, begin potholing trenches for ASW to manifold group Z2, and begin installing 2" galvanized pipe over ventilation tunnel.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC continues installing metal framing (Unistrut) to support manifold pipe for manifold group Z1A, finish installing wellheads and piping for ASWs 18, 19, 23-26, 29-40 and 58-63, continue backfilling trenches for ASWs to manifold Z1A group, potholing trenches for ASW to manifold group Z2 and installing 2" galvanized pipe over ventilation tunnel.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/11/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Northwest

Description: View of set up for installing 2" galvanized pipe over ventilation tunnel.



Photograph No. 2

Direction: West

Description: View of construction area from launch pad.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/11/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of construction area from cable tray.



Photograph No. 4

Direction: South

Description: View of 2" galvanized pipe placed over ventilation tunnel. The pipe is supported by metal channels and clamps.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 57º - 79º, clear, wind 6 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman
Dave Longino	FECC	Laborer
Jared Link	FECC	Laborer
Thomas Watson	FECC	Laborer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues installing 2" galvanized pipe over ventilation tunnel, installing metal framing (Unistrut) to support manifold pipe for manifold group Z1A, backfilling trenches for ASWs to manifold group Z1A, performing pressure test on twelve 500-ft rolls of 1" HDPE pipe (held 60 psi for >15 minutes), begin digging out around ASWs on south side of ventilation tunnel and finish potholing trenches for ASWs to manifold group Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue installing 2" galvanized pipe over ventilation tunnel, installing metal framing (Unistrut) to support manifold pipe for manifold group Z1A, backfilling trenches for ASWs to manifold group Z1A, performing pressure test on twelve 500-ft rolls of 1" HDPE pipe (held 60 psi for >15 minutes), and digging out around ASWs on south side of ventilation tunnel.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: East Description: View of trenching and installation of individual ASW piping (1″ HDPE pipe) between cable tray and ventilation tunnel (manifold group Z1A area).	
Photograph No. 2 Direction: East Description: View of 2” galvanized pipe installation over ventilation tunnel.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of Unistrut installation in manifold group Z1A.



Photograph No. 4

Direction: East

Description: View of 1” HDPE pipe placement in manifold Z1A area.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 61º - 78º, clear, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues installing 2" galvanized pipe over ventilation tunnel, installing metal framing (Unistrut) to support manifold pipe for manifold group Z1A, backfilling trenches for ASWs to manifold group Z1A, digging out around ASWs on south side of ventilation tunnel, beginning to hook up ASW piping to Unistrut for manifold group Z1A, and beginning to trench individual ASWs to manifold group Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue installing 2" galvanized pipe over ventilation tunnel, backfilling trenches for ASWs to manifold Z1A group, digging out around ASWs on south side of ventilation tunnel, hooking up ASW piping to Unistrut for manifold group Z1A and trenching ASWs to manifold group Z2.

Finish installing metal framing (Unistrut) to support manifold pipe for manifold group Z1A.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: East

Description: View of individual ASW piping (1″ HDPE) being connected to Unistrut.



Photograph No. 2

Direction: West

Description: View of trench for connecting individual ASWs to manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Northwest

Description: View of 2" galvanized pipe installed and fastened to cable tray over ventilation tunnel.



Photograph No. 4

Direction: West

Description: View of trench for individual ASWs to manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 63º - 80º, clear, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues installing 2" galvanized pipe over ventilation tunnel, backfilling trenches for individual ASWs to manifold group Z1A, digging out around ASWs on south side of ventilation tunnel, hooking up ASW piping to Unistrut for manifold Z1A, and trenching ASWs to manifold group Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue installing 2" galvanized pipe over ventilation tunnel, backfilling trenches for ASWs to manifold Z1A group, digging out around ASWs on south side of ventilation tunnel, hooking up ASW piping to Unistrut for manifold Z1A and trenching ASWs to manifold Z2.

ASWs 115-128, 139 and 144 trenched to manifold Z2.

15:15 Clean up and secure site for departure.

16:00 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

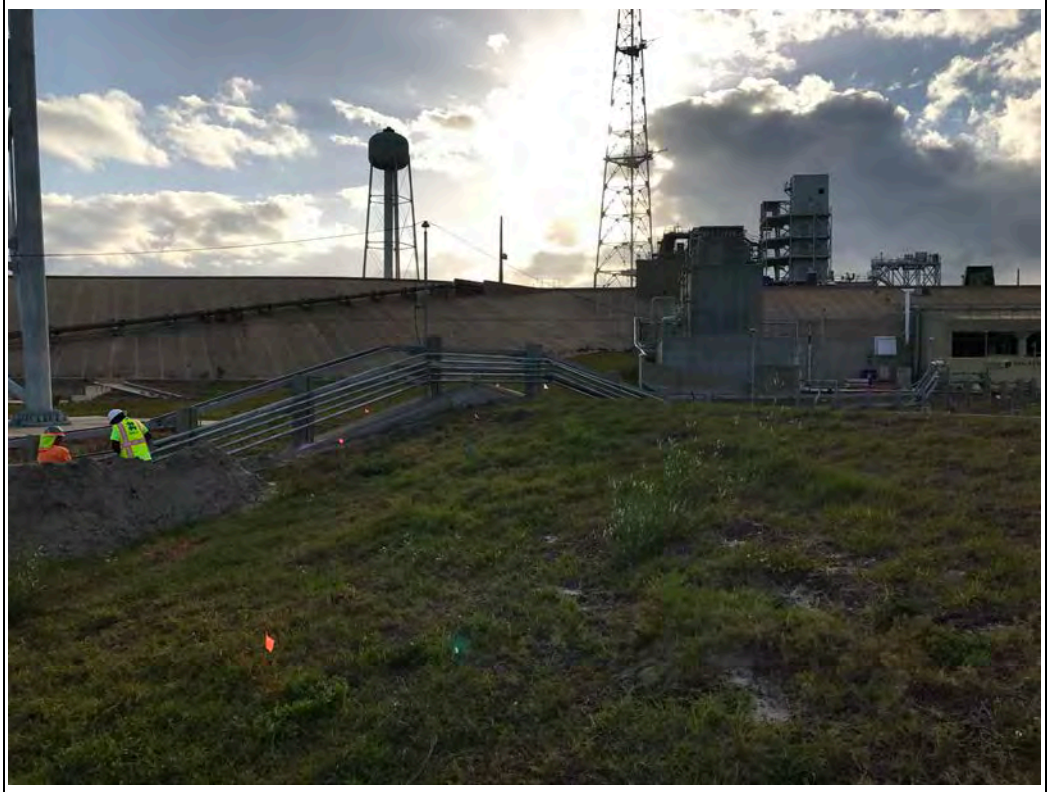
Description: View of individual ASW piping connected to Unistrut at manifold group Z1A.



Photograph No. 2

Direction: East

Description: View of 2" galvanized pipe installation over ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of ASW trenches to manifold group Z2.



Photograph No. 4

Direction: West

Description: View of ASW trenches for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 55º - 80º, clear, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman

VISITOR'S NAME	COMPANY
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues trenching ASWs to manifold group Z2, connecting ASW piping to Unistrut for manifold group Z1A, digging out ASWs for wellhead placement (manifold group Z2), and constructing well pads for ASWs by LOX sphere.

8:00 Mike Deliz on site.

8:10 Mike Deliz departs site.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue trenching ASWs to manifold group Z2, connecting ASW piping to Unistrut for manifold group Z1A, digging out ASWs for wellhead placement (manifold group Z2), and constructing well pads for ASW by LOX sphere.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: West Description: View of 1" HDPE pipe for individual ASWs connected to Unistrut at manifold group Z1A.	
Photograph No. 2 Direction: East Description: View of backfilling trenches for ASWs connected to manifold group Z1A.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of ASW248 well pad completion.



Photograph No. 4

Direction: West

Description: View of trenches from ASWs to manifold groups Z1A and Z2, taken from launch pad.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/18/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 57º - 82º, clear, wind 3 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Mark Boyd	FECC	Foreman
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/18/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

Digging restriction due to ULA Atlas V launch at 11:15.

7:30 FECC crew begin connecting ASW pipe to Unistrut for manifold group Z1A and laying out manifolds south of ventilation tunnel (manifold groups Z1B and Z3).

11:15 FECC crew continue connecting ASW pipe to Unistrut, and begin trenching ASWs to manifold group Z2, building well pads and installing wellhead on ASWs for Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue connecting ASW pipe to Unistrut at manifold group Z1A, trenching ASW to Z2, building well pads and installing wellhead on ASWs for manifold group Z2 - see “AS System Status Log” for ASWs trenched and wellheads installed.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/18/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of trenches from ASWs to manifold group Z2.



Photograph No. 2

Direction: Northwest

Description: View of above-ground 2” galvanized pipe crossing over ventilation tunnel. Transition from 4" HDPE pipe to 2" HDPE pipe to be completed at a later date.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/18/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Northwest

Description: View of trench containing four 4" HDPE pipes toward ventilation tunnel.



Photograph No. 4

Direction: East

Description: View of ASWs connected to Unistrut for manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 63º - 81º, cloudy, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
Eric Sager	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:45 Eric Sager arrives on site.

FECC crew continues laying out proposed trenches for ASWs south of ventilation tunnel, connecting ASW pipe to Unistrut for manifold group Z1A, trenching ASWs to manifold group Z2, installing 2" HDPE pipe to manifold group Z1A and installing wellhead on ASWs for manifold group Z2.

9:45 Eric Sager departs site.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue laying out proposed trenches for ASWs south of ventilation tunnel, connecting ASW pipe to Unistrut for manifold group Z1A, trenching ASW to manifold group Z2, installing 2" HDPE pipe to manifold group Z1A, and installing wellhead on ASWs for manifold group Z2 - see "AS System Status Log" for ASWs trenched and wellheads installed.

16:15 Clean up and secure site for departure.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: South

Description: View of trenches and 2" HDPE pipe to manifold group Z1A.



Photograph No. 2

Direction: Southwest

Description: View of trenches and 2" HDPE pipe to manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of trenches and 2" HDPE pipe to manifold group Z1A. This location will be where the HDPE pipe comes above ground to enter the NEMA enclosure manifolds.



Photograph No. 4

Direction: NA

Description: View of placement of 2" HDPE pipe to manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 56º - 80º, cloudy, wind 5 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:40 FECC crew continues connecting ASW pipe to Unistrut for manifold group Z1A, trenching ASWs to manifold group Z2, and installing wellheads on ASWs in manifold group Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue connecting ASW pipe to Unistrut for manifold group Z1A, trenching ASWs to manifold group Z, and installing wellheads on ASWs in manifold group Z2 - see “AS System Status Log” for ASWs trenched and wellheads installed.

16:15 Clean up and secure site for departure - see “AS System Status Log” for ASWs trenched and wellheads installed.

16:00 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of trenches from ASWs to manifold group Z2.



Photograph No. 2

Direction: NA

Description: View of typical ASW with galvanized wellhead installed, prior to connecting to the HDPE piping system.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of typical ASW with PVC wellhead installed, prior to connecting to the HDPE piping system.



Photograph No. 4

Direction: Southeast

Description: View of trenching from ASWs to manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 56º - 80º, cloudy, wind 5 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:40 FECC crew continues connecting ASW pipe to Unistrut for manifold group Z1A, trenching ASWs to manifold group Z2 and installing wellheads on ASWs in manifold group Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue connecting ASW pipe to Unistrut for manifold group Z1A, trenching ASWs to manifold group Z2 and installing wellheads on ASWs for manifold group Z2 - see “AS System Status Log” for ASWs trenched and wellheads installed.

16:15 Clean up and secure site for departure

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of ASW piping tied in to Unistrut.



Photograph No. 2

Direction: Southeast

Description: View of ASW trenching activities for piping to manifold Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of ASW with PVC wellhead installed.



Photograph No. 4

Direction: NA

Description: View of HDPE fusing equipment being used to fuse 1” HDPE in open trench.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 64º - 85º, cloudy, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:40 FECC crew continues connecting ASW pipe to Unistrut for manifold group Z1A, trenching ASWs to manifold group Z2, installing wellheads on ASWs for manifold group Z2, and begin installing pipe from ASWs to manifold group Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Finish connecting ASW pipe to Unistrut for manifold group Z1A and continue trenching ASWs to manifold group Z2, installing wellheads on ASWs for manifold group Z2 and installing pipe from ASWs to manifold group Z2 - see “AS System Status Log” for ASWs trenched and wellheads installed.

16:15 Clean up and secure site for departure

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: West Description: View of trenches from ASWs to manifold group Z2.	
Photograph No. 2 Direction: West Description: View of construction area from launch pad.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of ASW connected to Unistrut at manifold group Z1A.



Photograph No. 4

Direction: Southeast

Description: View of ASW pipe from ASWs to manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 59º - 82º, cloudy, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Fritz Nereus	FECC	Operator
Mark Boyd	FECC	Foreman

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues installing pipe connecting ASWs to manifold group Z2, trench to manifold group Z2 area in preparation of installing Unistrut and begin backfilling trenches to manifold group Z2.

8:00 NASA locators arrive on site, begin marking utilities south of escape tunnel.

10:45 NASA locators depart site. Dig permit now approved for south of ventilation tunnel.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue installing pipe connecting ASWs to manifold group Z2, trench to manifold group Z2 area in preparation of installing Unistrut and begin backfilling trenches to manifold group Z2.

16:15 Clean up and secure site for departure

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of trenches from ASWs to manifold group Z2.



Photograph No. 2

Direction: Southeast

Description: View of trenches for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of trenches for air sparge well piping north of the ventilation tunnel.



Photograph No. 4

Direction: West

Description: View of trenches for air sparge well piping north of the ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 59º - 82º, cloudy, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues installing pipe connecting ASWs to manifold group Z2, backfilling trenches to manifold group Z2, stubbing up 2" above-ground galvanized pipe crossing over ventilation tunnel and begin installing construction fence along the road on the south side of the ventilation tunnel.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue installing pipe connecting ASWs to manifold group Z2, backfilling trenches to manifold group Z2, stubbing up 2" above-ground galvanized pipe crossing over ventilation tunnel and installing construction fence along the road on the south side of the ventilation tunnel.

16:15 Clean up and secure site for departure

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: East

Description: View of construction fence placement south of ventilation tunnel along the road.



Photograph No. 2

Direction: West

Description: View of fence placement south of ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of trenching activities from launch pad.



Photograph No. 4

Direction: West

Description: View of trenching activities for manifold Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 68º - 89º, partly cloudy, wind 6 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues installing pipe connecting ASWs to manifold group Z2, backfilling trenches to manifold group Z2 and installing construction fence along road on south side of escape tunnel

DMS begins final pressure tests for pipe and wellheads for ASWs connected to manifold group Z1A (in accordance with specs).

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue installing pipe connecting ASWs to manifold group Z2, backfilling trenches to manifold group Z2 and finish installing construction fence along road on south side of escape tunnel.

16:15 Clean up and secure site for departure

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: East Description: View of trenching activity for ASWs and AS Leg piping for manifold group Z2.	
Photograph No. 2 Direction: West Description: View of trenching activity for ASWs and AS Leg piping for manifold group Z2.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/27/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: North

Description: View of trenching activity for ASWs and AS Leg piping for manifold group Z2.



Photograph No. 4

Direction: West

Description: View of trenching activities from launch pad.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 74º - 88º, partly cloudy, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer

VISITOR'S NAME	COMPANY
Jim Langenbach	Geosyntec
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues backfilling trenches to manifold group Z2, installing pipe connecting ASWs to manifold group Z2 and installing Unistrut for manifold group Z2.

DMS collects GPS location of trenches for manifold group Z2.

8:00 Jim Langenbach and Mike Deliz on site for site walk.

9:30 Jim Langenbach and Mike Deliz depart site.

DMS finished collecting GPS points.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches to manifold group Z2, installing Unistrut for manifold group Z2 and finish installing pipe connecting ASWs to manifold group Z2.

DMS finishes final pressure tests for ASWs connected to manifold group Z1A – all passed.

16:15 Clean up and secure site for departure

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of ASW95 after 1″ HDPE pipe is installed.



Photograph No. 2

Direction: West

Description: View of 1” HDPE pipe being welded to ASW wellhead.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 4/28/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of personnel setting up to weld 1" HDPE pipe.



Photograph No. 4

Direction: NA

Description: View of Unitstrut being installed for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 74º - 88º, partly cloudy, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Allen Brackner	FECC	Operator
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Dump Truck	3 yds	Cummins
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:45 FECC crew continues backfilling trenches to manifold group Z2, installing Unistrut for manifold group Z2, begin trenching ASWs south of ventilation tunnel and begin forming pads for manifold group Z1A.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches to manifold group Z2, installing Unistrut for manifold group Z2, trenching ASWs south of ventilation tunnel and forming pads for manifold group Z1A.

Begin installing transition fittings from 2” HDPE pipe to galvanized crossing over ventilation tunnel.

16:15 Clean up and secure site for departure

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Northeast

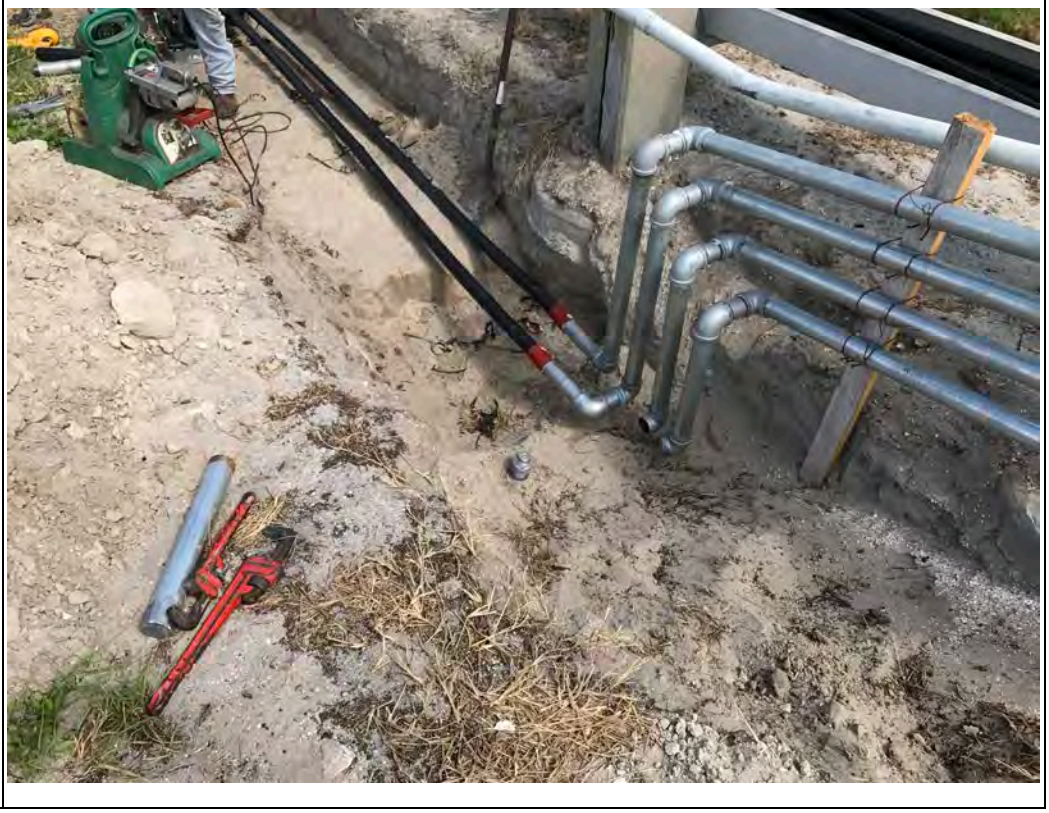
Description: View of trenching activities south of ventilation tunnel.



Photograph No. 2

Direction: West

Description: View of 2" HDPE and galvanized pipe transition for the pipe crossing over ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Northeast

Description: View of trench-work south of ventilation tunnel.



Photograph No. 4

Direction: East

Description: View of backfilling main trench to proposed manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 68º - 80º, thunderstorm, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
Parker Duttenhauer	FECC	Operator
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Allen Brackner	FECC	Operator
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:45 FECC crew continues backfilling trenches to manifold group Z2, trenching south of ventilation tunnel, forming manifold pads for manifold group Z1A, installing Unistrut for manifold group Z2, and transitioning 2" HDPE to galvanized pipe crossing over ventilation tunnel.

10:30 Phase II weather alert, all personnel take cover in vehicles.

12:30 Still under a Phase II weather alert and ground conditions are too sloppy for trenching. All personnel depart site.

14:20 Phase II weather alert is over.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of backfilled trenches for ASWs to manifold group Z2.



Photograph No. 2

Direction: Northwest

Description: View of backfilled trenches for ASWs to manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of trench-work south of ventilation tunnel.



Photograph No. 4

Direction: South

Description: View of trench-work south of ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 64º - 84º, clear, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Allen Brackner	FECC	Operator
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues backfilling trenches to manifold group Z2, trenching south of ventilation tunnel, forming manifold pads for manifold group Z1A, installing Unistrut for manifold group Z2, and transitioning 2" HDPE pipe to galvanized pipe crossing over ventilation tunnel.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches to manifold group Z2, trenching south of ventilation tunnel, forming manifold pads for manifold group Z1A, installing Unistrut for manifold group Z2, and transitioning 2" HDPE pipe to galvanized pipe crossing over ventilation tunnel.

Hardened concrete slurry (very little aggregate) was encountered during trenching south of the ventilation tunnel at about 6" BLS. Thickness ranged from about 18 to 24 inches. A hammer attached for excavator will be necessary to break up material for trenching. Volume of concrete slurry removed during trenching will be recorded after removal and transported off-site.

16:00 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of personnel connecting pipe to Unistrut for manifold group Z2.



Photograph No. 2

Direction: Southeast

Description: View of ASW piping and Unistrut for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/3/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of concrete slurry encountered during trenching south of ventilation tunnel.



Photograph No. 4

Direction: West

Description: View of trenching for manifold group Z3 Unistrut.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/4/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 64º - 85º, cloudy, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Allen Brackner	FECC	Operator
Fritz Nereus	FECC	Operator
Anthony Pritchett	FECC	Laborer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/4/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues backfilling trenches to manifold group Z2, trenching south of ventilation tunnel, forming manifold pads for manifold group Z1A and installing Unistrut for manifold group Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches to manifold group Z2, trenching south of ventilation tunnel, forming manifold pads for manifold group Z1A and installing Unistrut for manifold group Z2

16:00 Clean up and secure site. Trenching south of ventilation tunnel is complete, except for trenching across road, in parking lot and where concrete slurry was encountered.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/4/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: East

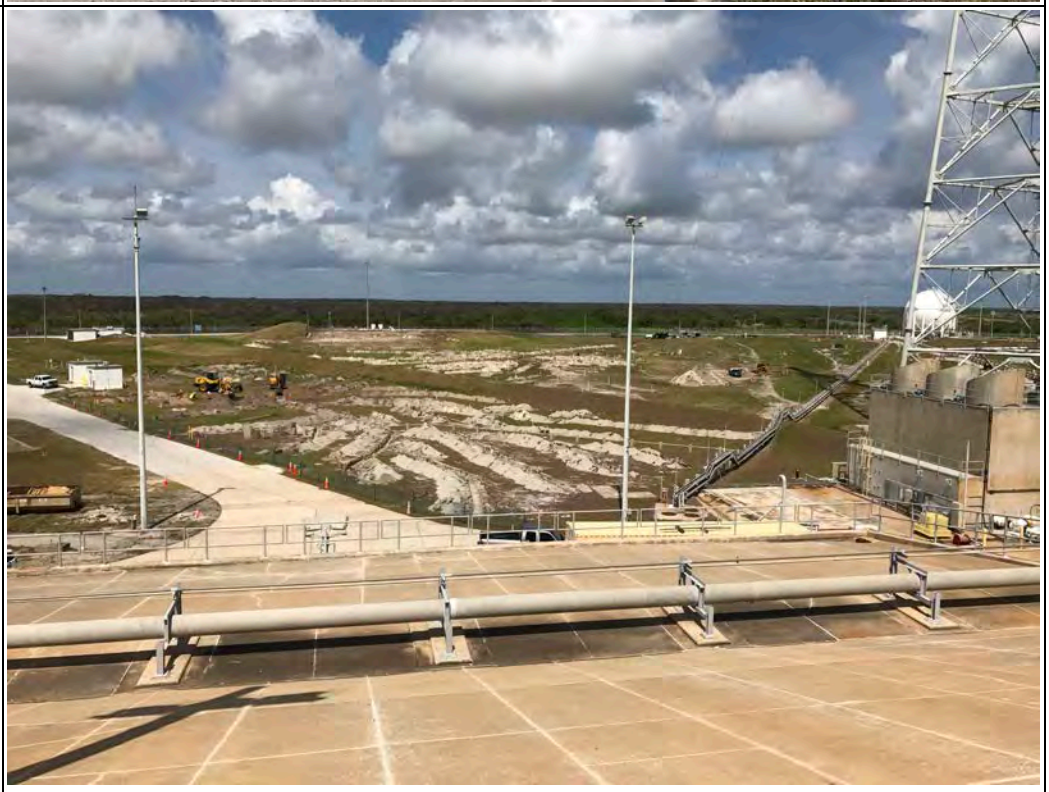
Description: View construction fence and traffic signs south of ventilation tunnel.



Photograph No. 2

Direction: West

Description: View of trenching south of ventilation tunnel from launch pad.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/4/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of form placement for pads for manifold group Z1A.



Photograph No. 4

Direction: East

Description: View of set up for Unistrut installation for manifold group Z3.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 64º - 80º, cloudy, wind 12 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Allen Brackner	FECC	Operator
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

FECC continues backfilling trenches to manifold group Z2, installing Unistrut for manifold group Z2, forming pads for manifold group Z1A and begin installing wellheads south of ventilation tunnel.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches to manifold group Z2, installing Unistrut for manifold group Z2, installing wellheads south of ventilation tunnel and finish forming pads for manifold group Z1A.

16:00 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: East

Description: View of finished forms for pads at manifold group Z1A.



Photograph No. 2

Direction: North

Description: View of backfilling around and over wellheads for ASWs installed in manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of PVC ASW wellhead.



Photograph No. 4

Direction: East

Description: View of backfilling trenches for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 64º - 90º, cloudy, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Concrete	6 yds	For manifold group pads

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues backfilling trenches to manifold group Z2, installing wellheads on ASWs south of ventilation tunnel and begin laying out area where asphalt road and parking lot will be trenched.

DMS collects GPS locations for ASW and trenches south of ventilation tunnel.

Mini excavator with hammer attached delivered to site.

Second (final) roll-off of IDW soil transported offsite for disposal.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches to manifold group Z2, installing wellheads on ASWs south of ventilation tunnel and laying out area where asphalt road and parking lot will be trenched.

14:15 Concrete truck arrives site with 6 yds of concrete; constructed concrete manifold pads for Z4 and Z1A.

16:00 Pads for manifold Z1A and Z4 have been placed; begin “finishing” concrete.

16:30 Finishing concrete complete, clean up and secure site.

16:45 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View ASW piping connected to Unistrut for manifold group Z2.



Photograph No. 2

Direction: South

Description: View of backfilling trenches for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

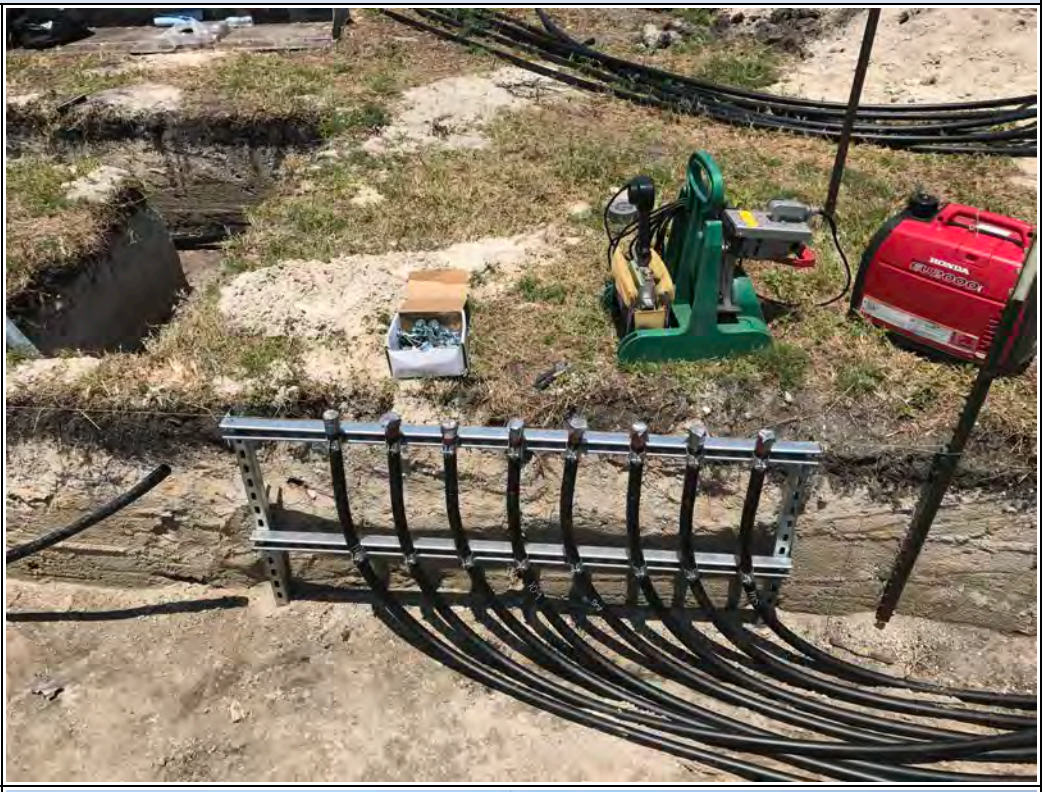
PROJECT: Launch Complex 39B	**DATE:** 5/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of ASWs piping connected to Unistrut for manifold group Z2.



Photograph No. 4

Direction: East

Description: View of concrete placement for manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 63º - 89º, clear, wind 3 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues backfilling trenches to manifold group Z2, connecting ASW piping to Unistrut for manifold group Z2, begin breaking up concrete encountered about 6” bls while trenching south of ventilation tunnel, begin saw cutting asphalt road and parking lot to be trenched south of ventilation tunnel, and begin installing Unistrut for manifold group Z3.

DMS installs project signs and collects GPS locations of additional ASWs and trenches south of ventilation tunnel.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches to manifold group Z2, connecting ASW piping to Unistrut for manifold group Z2, breaking up concrete encountered about 6” bls while trenching south of ventilation tunnel, saw cutting asphalt road and parking lot to be trenched south of ventilation tunnel, and installing Unistrut for manifold group Z3.

DMS finished collecting GPS locations for ASWs and trenches south of ventilation tunnel.

16:00 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of saw cutting across road located south of the ventilation tunnel.



Photograph No. 2

Direction: East

Description: View of exclusion zone with signage south of ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

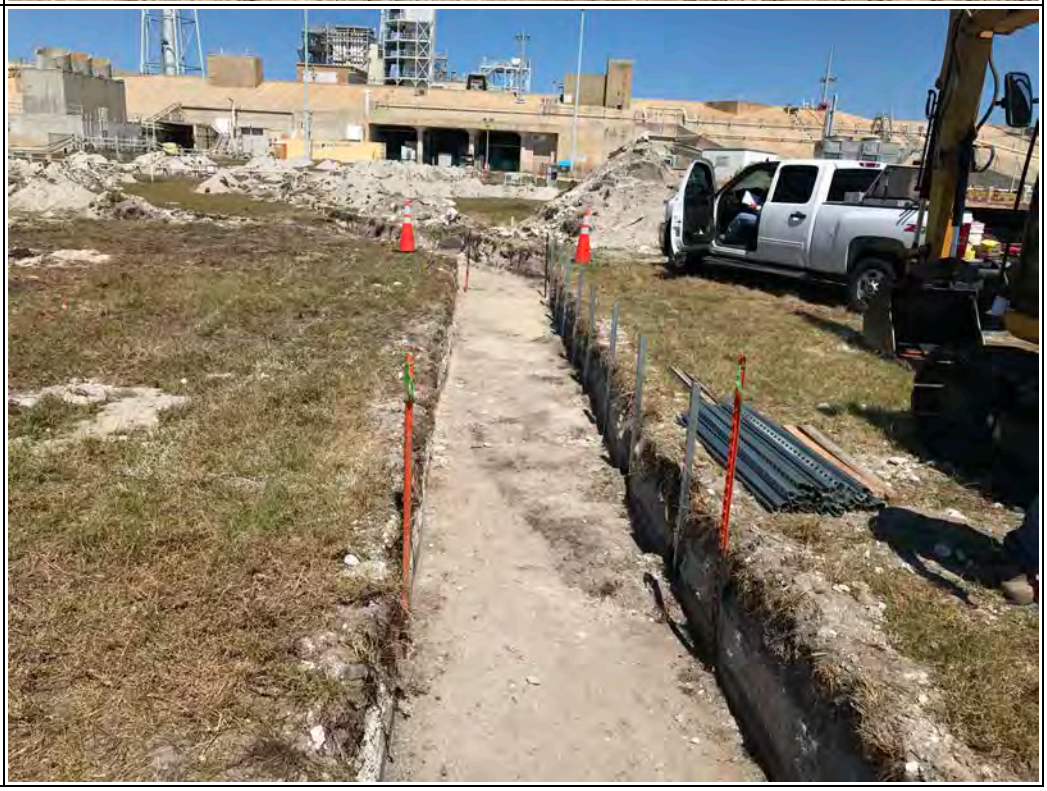
Description: View of concrete pads for manifold group Z1A.



Photograph No. 4

Direction: East

Description: View of Unistrut being installed for manifold group Z3.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 67º - 92º, cloudy, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues connecting ASW piping to Unistrut for manifold group Z2 (2 crews), breaking up concrete encountered while trenching south of ventilation tunnel and installing Unistrut for manifold group Z3.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC continues connecting ASW piping to Unistrut for manifold group Z2 (2 crews), breaking up concrete encountered while trenching south of ventilation tunnel and finish installing Unistrut for manifold group Z3.

One, 18 yd roll-off delivered to site for transporting concrete to Schwartz landfill.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: East

Description: View of 1″ HDPE piping to manifold group Z2.



Photograph No. 2

Direction: East

Description: View of set up for connecting 1″ HDPE piping to manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/10/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Southwest

Description: View of trenching soil and concrete debris south of ventilation tunnel.



Photograph No. 4

Direction: Southeast

Description: View of trenching concrete material south of ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/11/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 67º - 93º, cloudy, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Traffic plates	8	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/11/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues installing ASW wellheads south of escape tunnel, connecting HDPE pipe to manifold group Z2 and begin loading roll-offs with hardened concrete slurry and transporting for Schwartz landfill for disposal.

Eight traffic plates delivered to site to cover trenches in asphalt.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue installing ASW wellheads south of escape tunnel, connecting HDPE pipe to manifold group Z2 and loading roll-offs with hardened concrete slurry and transporting for Schwartz landfill for disposal.

Eight manifold boxes are delivered to site – includes all for manifold group Z4 and Z1A-L1.

Five, 18 yd loads of material transported to Schwartz landfill – includes two loads of hardened concrete slurry material and three loads of concrete debris/soil mixed.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

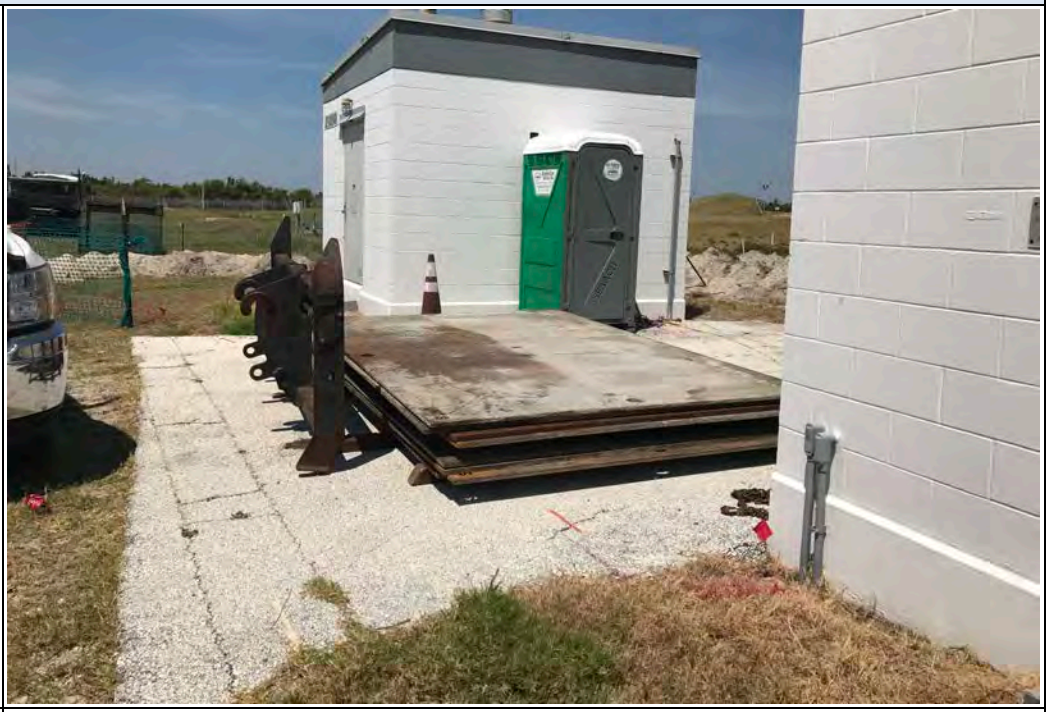
PROJECT: Launch Complex 39B	**DATE:** 5/11/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of traffic plates delivered to site.



Photograph No. 2

Direction: North

Description: View of mini excavator with hammer attachment breaking up concrete slurry.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/11/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Southwest

Description: View of roll-off being loaded with concrete debris for off-site transport and disposal at Schwartz landfill.



Photograph No. 4

Direction: Southeast

Description: View of trenches being backfilled in the foreground and Falcon 9 static fire test occurring in the background.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 66º - 95º, clear, wind 15 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC continues installing ASW wellheads south of ventilation tunnel, connecting HDPE pipe to manifold group Z2, begin preparing pipe for ASW installation south of road and in PFC parking lot, and begin trenching for AS Legs to manifold group Z3.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue installing ASW wellheads south of ventilation tunnel, preparing pipe for ASW installation south of road and in PFC parking lot, and trenching for AS Legs to manifold group Z3 and finish connecting HDPE pipe to manifold group Z2.

Begin placing and anchoring manifold boxes for manifold groups Z4 and Z1A.

15:30 Clean up and secure site.

15:45 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

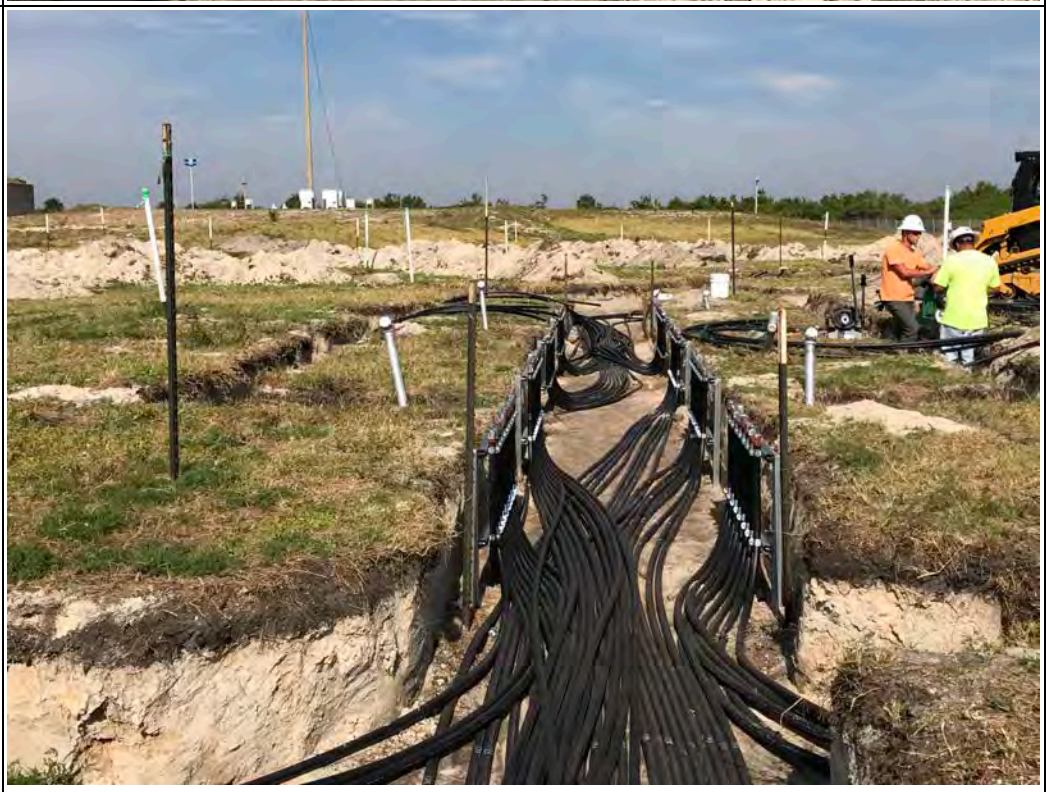
Description: View of trenching AS Legs for manifold group Z3.



Photograph No. 2

Direction: West

Description: View of final ASWs being connected to Unistrut for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of PVC wellhead with locating magnet attached.



Photograph No. 4

Direction: Southeast

Description: View of manifold boxes placed and anchored for manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 64º - 83º, clear, wind 3 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC Crew begin preparing for trenching, piping, backfilling and density tests for remaining three asphalt crossings, order concrete for Wednesday, May 15, continue installing ASW wellheads south of ventilation tunnel, continue placing and anchoring manifold boxes for manifold group Z4 and installing three boxes for manifold group Z1A.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue preparing for trenching, piping, backfilling and density tests for remaining three asphalt crossing, finish installing ASW wellheads south of ventilation tunnel (all wellheads installed for manifold groups Z1B and Z3), finish placing and anchoring manifold boxes for manifold group Z4 and finish installing three boxes for manifold group Z1A.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: North

Description: View of piping of ASWs on south side of road south of ventilation tunnel.



Photograph No. 2

Direction: North

Description: View of piping of ASWs on south side of road south of ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of construction of manifold groups Z1B and Z3 areas.



Photograph No. 4

Direction: West

Description: View of manifold boxes placed and anchored for manifold group Z4.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 63º -85º, p. cloudy, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC Crew begin trenching, pipe placement, and backfilling asphalt road from ASW194 to ASW198 and ASW230 to ASW200 and in asphalt parking lot from ASW233 to northeast edge of asphalt.

12:00 All personnel break for lunch.

12:30 All personnel return from lunch.

Continue trenching, pipe placement, and backfilling asphalt road from ASW194 to ASW198 and ASW230 to ASW200 and in asphalt parking lot from ASW233 to northeast edge of asphalt.

Two density tests performed for each backfilled trenched areas, including two crossing the roadway and one trench in PFC parking lot (one test for compacted subsurface soil and one for compacted lime rock road base), and cover trenches with traffic plates.

Cover trenches with traffic plates overnight.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Southwest

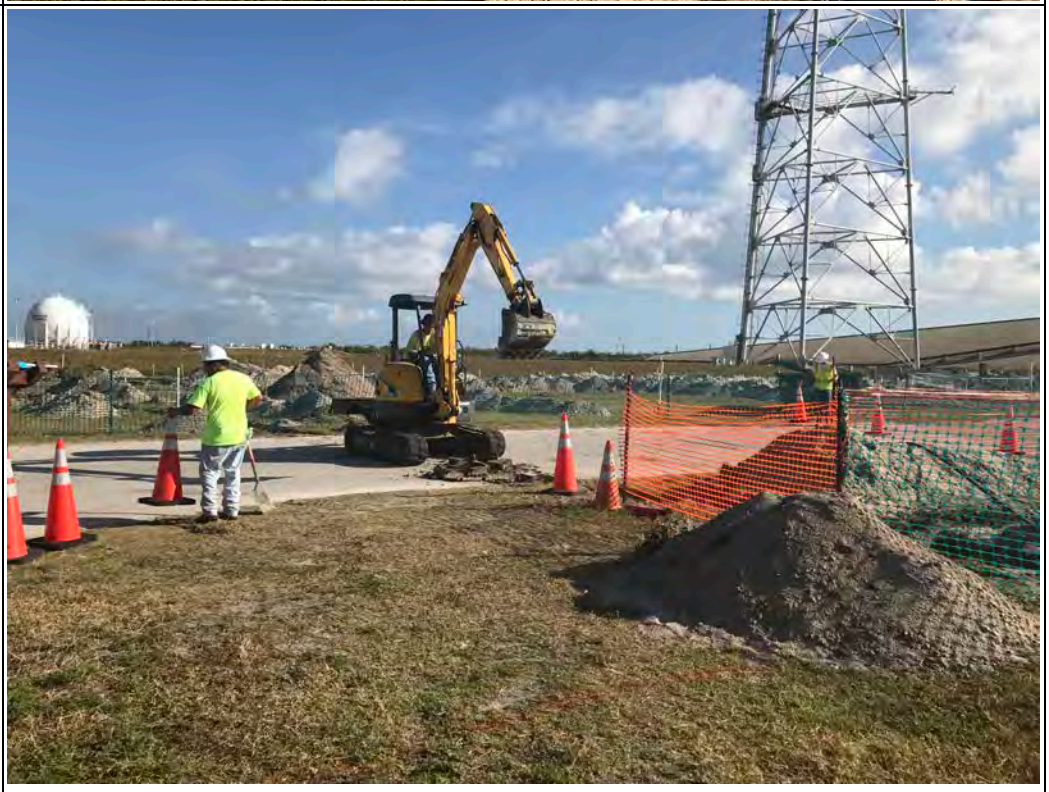
Description: View of trench for ASW233.



Photograph No. 2

Direction: North

Description: View of trench across road from ASW209 to ASW200.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

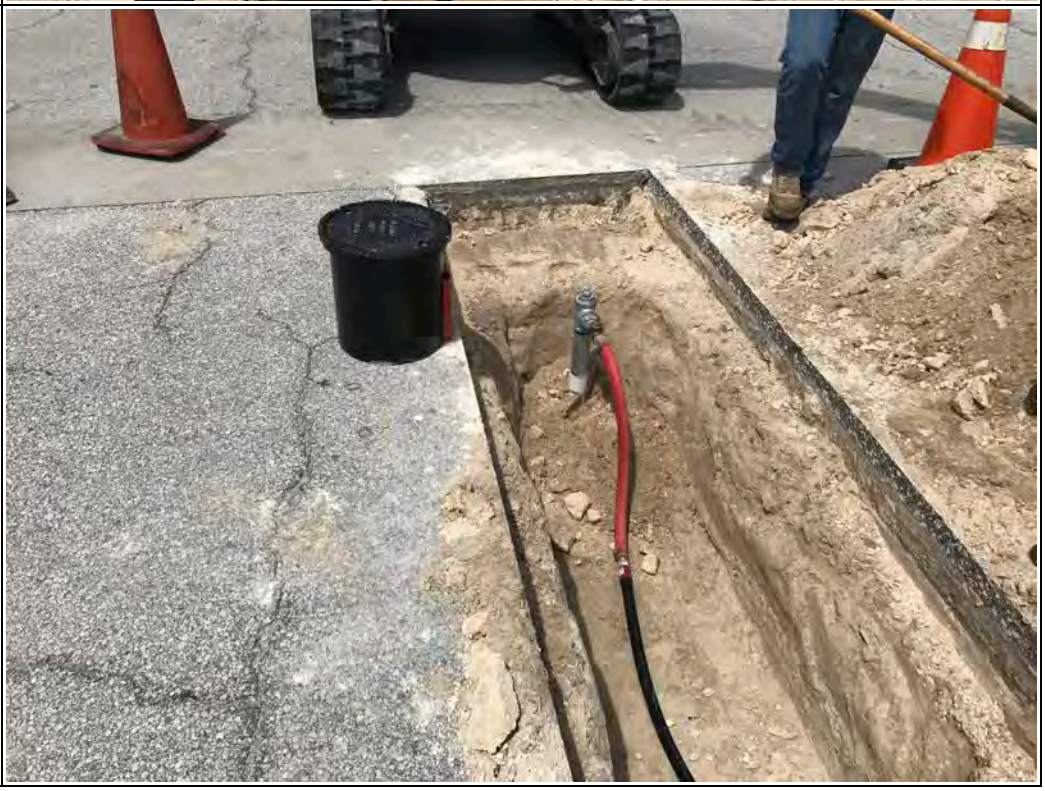
Description: View of pipe placement and backfilling trench from ASW233 in asphalt parking lot.



Photograph No. 4

Direction: NA

Description: View of wellhead and pipe placement for ASW233 prior to backfilling.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 73º - 84º, clear, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
Eric Sager	Geosyntec
Gordon Kirkland	FECC
Rebecca Daprato	Geosyntec
Concrete tests	Universal Inc.

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Concrete	7.0 cubic yards	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew sets up traffic controls and prepare for concrete delivery and placement.

8:00 Eric Sager of Geosyntec on site.

8:45 Eric Sager departs site.

13:15 All personnel break for lunch.

Eric Sager returns to site.

13:30 All personnel return from lunch.

14:00 Gordon Kirkland arrives on site, discuss project schedule with Eric Sager, DMS and Angelo Ippolito.

Concrete truck on site. FECC crew begin concrete placement across road from ASW194 to ASW198 and ASW230 to ASW200 and in asphalt parking lot from ASW233 to northeast edge of asphalt.

14:30 Rebecca Daprato of Geosyntec arrives on site.

15:45 Eric Sager, Rebecca Daprato and Gordon Kirkland depart site.

16:10 Concrete placement complete. Universal Inc. on site to collect slump test and cylinders for compressive strength tests.

16:30 Clean up and secure site.

16:45 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: South

Description: View of concreted trench for ASWs crossing Pad Road from south of road to manifold group Z3.



Photograph No. 2

Direction: Northeast

Description: View of concrete placement in trench for ASWs south of pad road trenched to manifold group Z1B.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/17/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of concrete placement in trench for ASW233 in PFC parking lot.



Photograph No. 4

Direction: West

Description: View of concrete placement in trench for ASW233 in PFC parking lot.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/18/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 74º - 87º, clear, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/18/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC Crew begins backfilling Unistrut area for manifold group Z2 and prepare for form board placement, continue piping ASWs to manifold groups Z1B and Z3, place traffic plates over newly placed concrete for roadway crossing, remove traffic control signs and safety cone, and resume backfilling trenches north of ventilation tunnel.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling Unistrut area for manifold group Z2 and prepare for form board placement, piping ASWs to manifold groups Z1B and Z3, and backfilling trenches north of ventilation tunnel.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/18/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Southeast

Description: View of traffic plate placement over newly placed concrete.



Photograph No. 2

Direction: West

Description: View of placing traffic plates over concrete for the trench for ASW233.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/18/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of backfilling and preparing manifold group Z2 for form board placement.



Photograph No. 4

Direction: West

Description: View of pipe installation south of ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 73º - 83º, clear, wind 11mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues piping ASWs for manifold groups Z1B and Z3; backfilling trenches north of ventilation tunnel; resume trenching, piping and backfilling AS Legs for manifold groups Z4-L1/L2 and ASW246; perform pressure tests on ten 500-ft. rolls of 1" HDPE, and begin placing form boards for manifold group Z2.

DMS performs pressure tests for all ASW piping for manifold group Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue piping ASWs for manifold groups Z1B and Z3; backfilling trenches north of ventilation tunnel; trenching, piping and backfilling AS Legs for manifold group Z4-L1/L2 and ASW246; perform pressure test on 500-ft. rolls of 1" HDPE, and placing form boards for manifold group Z2.

DMS finishes pressure tests for all ASW piping for manifold group Z2 – all passed.

15:30 Clean up and secure site.

15:45 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: South

Description: View of trenching AS Legs Z4 – L1&L2.



Photograph No. 2

Direction: North

Description: View of trenching AS Legs Z4 – L1&L2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Southwest

Description: View of HDPE pipe placement south of ventilation tunnel.



Photograph No. 4

Direction: West

Description: View of HDPE pipe placement south of ventilation tunnel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 73º -89º, clear, wind 12 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continue piping ASWs to manifold groups Z1B and Z3, finish backfilling trenches north of escape tunnel, installing electrical conduit for proposed AS Trailer and begin installing fittings to connect ASW piping to manifold boxes for manifold groups Z1A and Z4.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue piping ASWs to manifold groups Z1B and Z3, backfilling trenches north of escape tunnel and installing fittings to connect ASW piping to manifold boxes for manifold groups Z1A and Z4.

17:15 Phase II is announced.

All personnel take cover in vehicles and depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of 1" HDPE piping connected to PVC ASW wellhead.



Photograph No. 2

Direction: North

Description: View of final electrical conduit placed in trench from main disconnect to proposed AS Trailer.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of form boards being built for manifold group Z2.



Photograph No. 4

Direction: Northwest

Description: View of hose installation from 1″ HDPE pipe connect to Unistrut to the manifolds in manifold group Z4.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 67º - 83º, p. cloudy, wind 7 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Concrete	4 cubic yards	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continue piping ASWs and AS Legs to manifold group Z1B and Z3, finish backfilling trenches north of escape tunnel and begin installing fittings to connect ASW hose from Unistrut to manifolds for manifold groups Z1A and Z4.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue piping ASWs and AS Legs to manifold group Z1B and Z3 and preparing for concrete placement for pads for manifold Z2.

15:30 Concrete delivered and pads for manifold group Z2 completed – originally scheduled for May 24, but due to storms forecasted for tomorrow changed delivery date to today.

16:30 Phase II occurred after concrete was poured and covered with plastic sheeting, cleaning up and secure site.

17:00 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: West Description: View of piping ASWs to manifold group Z3.	
Photograph No. 2 Direction: NA Description: View of AS Leg stub-up for proposed manifold group Z3.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Southwest

Description: View of concrete placement for manifolds in manifold group Z2.



Photograph No. 4

Direction: Southeast

Description: View of finish concrete pads for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 73º - 91º, cloudy, wind 7 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continue piping ASWs to manifold groups Z1B and Z3, begin backfilling trenches south of escape tunnel and begin installing hose connecting ASW piping to manifold boxes for manifold groups Z1A and Z4.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue piping ASWs to manifold groups Z1B and Z3, backfilling trenches south of escape tunnel and installing hose connecting ASW piping to manifold boxes for manifold groups Z1A and Z4.

15:00 Phase II lightning alert, all personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of concrete pads for manifold group Z2 after removing plastic sheeting.



Photograph No. 2

Direction: West

Description: View of trenching from ASWs to manifold groups Z1B and Z3 from launch pad.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/24/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of hoses connecting ASW piping to manifolds for manifold group Z4.



Photograph No. 4

Direction: Southeast

Description: View of preparation of hose connection form ASW piping to manifold group Z1A.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 68º -78 º, clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continue piping from ASWs to manifold group Z1B and Z3, backfilling trenches south of escape tunnel, installing hose connecting ASW piping to manifold boxes for manifold groups Z1A and Z4 and finish trenching and installing final 2" HDPE pipe (AS Leg) from manifold group Z2 to proposed location of AS Trailer.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue piping from ASWs to manifold groups Z1B and Z3, backfilling trenches south of escape tunnel and installing hose connecting ASW piping to manifold boxes for manifold groups Z1A and Z4.

Finish preliminary pressure testing on all remaining 1" HDPE ASW piping – all passed.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of pressure testing of 1" HDPE ASW piping.



Photograph No. 2

Direction: NA

Description: View of typical label on tested 1" HDPE piping.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/25/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of metering equipment (pressure gauges and flow meters) inside manifold box.



Photograph No. 4

Direction: West

Description: View of trenching and piping activities from launch pad.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 58º - 81º, clear, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continue piping ASWs to manifold groups Z1B and Z3, backfilling trenches south of escape tunnel, begin connecting ASW piping to Unistrut for manifold groups Z1B and Z3, begin anchoring manifold boxes to concrete pads for manifold group Z2 and finish trenching for AS Legs from proposed location of AS trailer to manifold group Z2 – excavation of all trenches for all AS Legs and ASWs are now complete.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

FECC crew continue piping ASWs to manifold groups Z1B and Z3, backfilling trenches south of escape tunnel, connecting ASW piping to Unistrut for manifold groups Z1B and Z3 and anchoring manifold boxes to concrete pads manifold group Z2.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of ASW piping activities for manifold groups Z1B and Z3.



Photograph No. 2

Direction: West

Description: View of anchored manifold boxes at pads for manifold groups Z1B and Z3.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/26/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Southwest

Description: View of trench filled with HDPE piping for manifold groups Z3 and Z1B.



Photograph No. 4

Direction: NA

Description: View of ASW piping during butt fusion process.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 66º - 84º, p. cloudy, wind 8 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues piping ASWs to manifold groups Z1B and Z3, backfilling trenches south of ventilation tunnel, connecting ASW piping to Unistrut for manifold groups Z1B and Z3, anchoring manifold boxes to concrete pads for manifold groups Z2 and begin installing hose connecting ASW piping to manifold boxes for manifold group Z2.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue piping ASWs to manifold groups Z1B and Z3, backfilling trenches south of ventilation tunnel, connecting ASW piping to Unistrut for manifold groups Z1B and Z3, anchoring manifold boxes to concrete pads for manifold group Z2 and installing hose connecting ASW piping to manifold boxes for manifold group Z2.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of ASW piping grouped together at manifold group Z3.



Photograph No. 2

Direction: West

Description: View of eight out on nine manifold enclosures anchored to concrete pads for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/30/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of backfilled trenches for manifold group Z2.



Photograph No. 4

Direction: West

Description: View of ASW piping connected to manifold enclosure for manifold group Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 73º - 92º, clear, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues piping ASWs to manifold group Z1B and Z3, backfilling trenches south of ventilation tunnel, connecting ASW piping to Unistrut for manifold groups Z1B and Z3 and finish installing hose connecting ASW piping to manifold enclosures for manifold group Z2.

9:00 Traffic plates from recently poured concrete are removed and transported off site by rental company.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue piping ASWs to manifold group Z1B and Z3, backfilling trenches south of ventilation tunnel, connecting ASW piping to Unistrut for manifold group Z1B and Z3 and finish installing hose connecting ASW piping to manifold enclosures for manifold group Z2.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: East

Description: View of ASW piping being connected to Unistrut.



Photograph No. 2

Direction: North

Description: View of finished concrete for trench from ASWs south of Pad Road to manifold group Z3.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 5/31/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: South

Description: View of trench plate being removed from concreted trench in PFC parking lot.



Photograph No. 4

Direction: West

Description: View of concreted trench going to ASW233 in PFC parking lot.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 75º - 87º, Thunderstorms, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
#57 Stone	6.50 tons	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC Crew continues piping ASWs to manifold group Z1B and Z3, backfilling trenches south of escape tunnel, connecting ASW piping to Unistrut for manifold groups Z1B and Z3 and transporting roll-off loads of non-hazardous trenched material (soil mixed with buried concrete, rebar and other construction debris) off site to Schwartz Landfill - material unacceptable for using as backfill to prevent damaging piping.

11:00 Finished transporting trenched material off site (three roll-offs transported to Schwartz for disposal). Roll-off driver departs site to pick up load of #57 stone for building pad for AS Trailer.

Begin installing final 2" AS Leg HDPE pipe for manifold group Z2 to AS Trailer.

12:30 One roll-off load of #57 stone delivered to site to be used for pad on which to set AS Trailer.

14:00 Begin Phase II lightning warning.

15:00 Phase II still in effect, all personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of backfilling trenches to manifold groups Z1B and Z3.



Photograph No. 2

Direction: North

Description: View of backfilled trench for electrical conduit from main disconnect to proposed location of AS Trailer.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

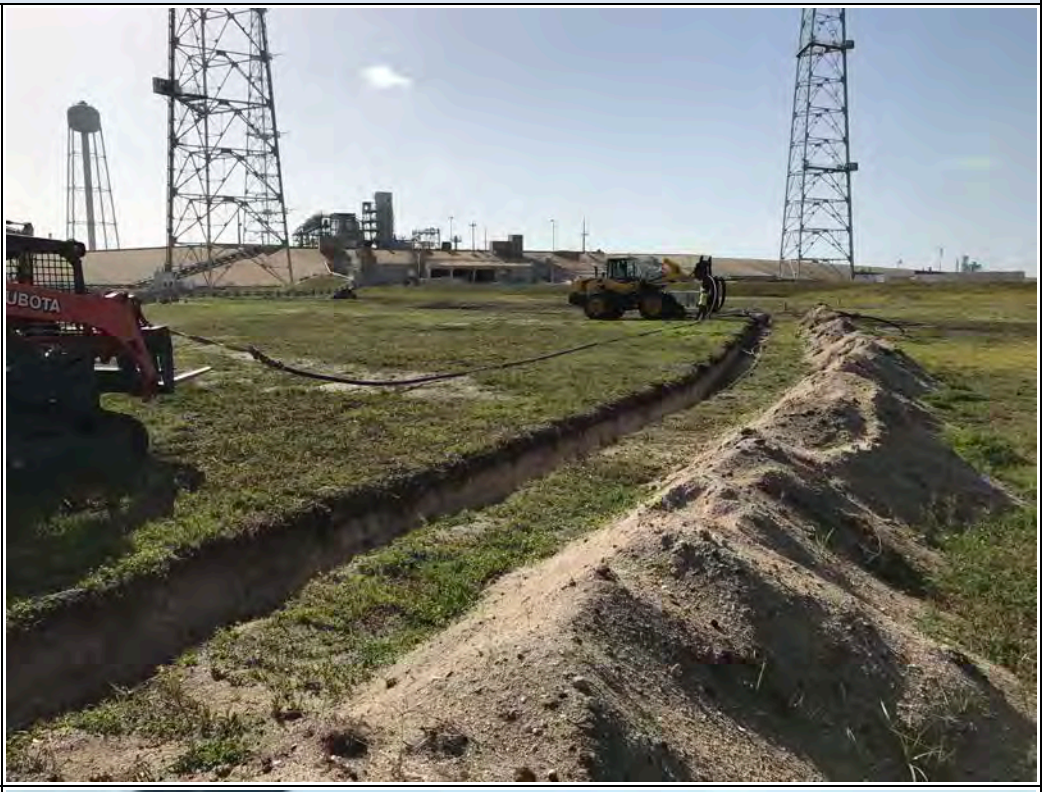
PROJECT: Launch Complex 39B	**DATE:** 6/1/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of 2" HDPE AS Leg piping being installed from manifold group Z2 to proposed location of AS Trailer.



Photograph No. 4

Direction: Northwest

Description: View of weather conditions upon departing site.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 71º - 84º, clear, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Dustin Lupus	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Phillip Cookriel	FECC	Laborer
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
Jim Langenbach	Geosyntec
Eric Sager	Geosyntec
Mike Deliz	NASA

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/2/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC Crew continues piping ASWs to manifold groups Z1B and Z3, backfilling trenches south of ventilation tunnel, applying Bahia grass seed on east half of backfilled trenches south of ventilation tunnel and finish pipe placement of AS Legs from AS trailer location to manifold group Z2.

8:15 Jim Langenbach, Eric Sager and Mike Deliz on site for discussion of placement and configuration of AS Trailer. It is agreed that the position of the trailer will be rotated 90 degrees from the originally proposed position – originally proposed with broad side parallel with road, now will be placed with broadside perpendicular with Pad Road.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue piping ASWs to manifold groups Z1B and Z3 and backfilling trenches south of ventilation tunnel.

Begin laying out new alignment of AS Trailer pad.

No new pictures taken today.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 71º - 83º, cloudy, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Breeding	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Dustin Lupus	FECC	Tech
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

6:30 AS Trailer delivered to site; DMS meets delivery driver at badging station.

7:30 DMS arrives on site. FECC crew on site. DMS conducts tailgate meeting and discuss daily activities. FECC crew continues backfilling trenches south of ventilation tunnel, trenching and installing electrical conduit from main disconnect and stub up where AS Trailer electrical hookup will be placed, and finish piping ASWs and finish connecting ASW piping to Unistrut for manifold groups Z1B and Z3.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches south of ventilation tunnel and begin final site restoration.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of AS Trailer delivered to site.



Photograph No. 2

Direction: West

Description: View of fittings on the outside of AS Trailer that will be connected to AS Leg manifolds.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/5/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of backfilling trenches for ASW piping connected to Unistrut at manifold groups Z1B and Z3.



Photograph No. 4

Direction: Southeast

Description: View of re-trenching for electrical conduit for new alignment of AS Trailer based on discussion recorded on 6/2/17 Daily Construction Report.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 71º - 83º, cloudy, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Breeding	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Dustin Lupus	FECC	Tech
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC Crew continue backfilling trenches south of ventilation tunnel, lay out and build pad for AS Trailer and collect soil sample from local fill dirt pit and submitted to lab for analysis – to be used to make up trenched material containing concrete and other buried construction debris unacceptable for backfilling trenches.

DMS begins preforming pressure tests on ASWs and piping for manifold groups Z1B and Z3.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches south of ventilation tunnel.

DMS continues pressure test on ASWs and piping for manifold groups Z1B and Z3.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/6/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of DMS performing pressure tests on ASW piping and wellhead.



Photograph No. 2

Direction: East

Description: View of AS Trailer pad being built. Geotextile that was placed immediately on the ground is visible prior to being covered by stone.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 71º - 84º, clear, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Breeding	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Dustin Lupis	FECC	Tech
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/7/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues backfilling trenches south of ventilation tunnel, places AS Trailer on pad, prepares the AS Trailer to be anchored, and begins building concrete pad forms for manifold groups Z1B and Z3.

DMS continues preforming pressure tests on ASWs and piping for manifold groups Z1B and Z3.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue backfilling trenches south of ventilation tunnel and begin building concrete pad forms for manifold groups Z1B and Z3.

DMS finishes preforming pressure tests on ASWs and piping for manifold groups Z1B and Z3 – all ASW and piping passed pressure test.

16:15 Clean up and secure site.

16:30 All personnel depart site.

No photos taken today.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 73º - 83º, cloudy, wind 9 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Breeding	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Dustin Lupis	FECC	Tech
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 Eight out of 10 remaining manifold boxes delivered to site by FECC.

FECC Crew continues building concrete pad forms for manifold groups Z1B and Z3 and backfilling trenches south of ventilation tunnel.

12:15 All personnel break for lunch.

12:45 All personnel return from lunch.

Continue building concrete pad forms for manifold groups Z1B and Z3 and backfilling trenches south of ventilation tunnel.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

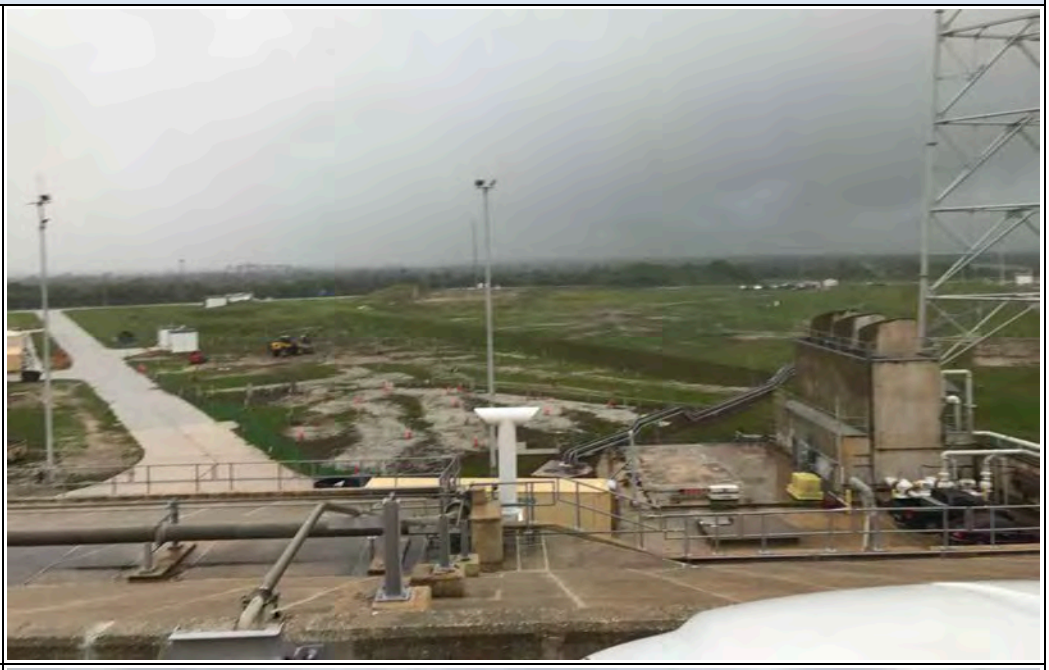
PROJECT: Launch Complex 39B	**DATE:** 6/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View from launch pad of backfilled trenches south of ventilation tunnel.



Photograph No. 2

Direction: West

Description: View of AS Trailer positioned on pad.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/8/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: Northwest

Description: View of backfilling trenches south of ventilation tunnel.



Photograph No. 4

Direction: Northwest

Description: View of FECC Crew cleaning up site.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 71º - 84º, clear, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Breeding	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Mark Boyd	FECC	Foreman
Josue Kadima	FECC	Laborer
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Concrete	5 cubic yards	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues backfilling trenches south of escape tunnel and completing final site restoration in all areas, including, hand grading, raking and grass seed application.

12:00 Concrete truck on site, FECC begins concrete placement for pads for manifold groups Z1B and Z3.

12:45 Concrete placement complete, break for lunch.

13:30 Return from lunch.

Continue backfilling trenches south of escape tunnel and continuing final site restoration in all areas.

15:15 Clean up and secure site.

15:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of straps and bolts used to tie down AS Trailer.



Photograph No. 2

Direction: West

Description: View of concrete truck beginning the concrete pour for manifold pads in manifold groups Z1B and Z3.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/9/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: East

Description: View of concrete placement and finishing for manifold group Z3.



Photograph No. 4

Direction: Northeast

Description: View of finished concrete for manifold group Z1B.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 75º - 84º, clear, wind 7 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Breeding	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator
Josue Kadima	FECC	Laborer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues final restoration in all areas, including, hand grading, raking and grass seed application, begins connecting AS Legs to AS Trailer, and begins anchoring and connecting hoses to manifold groups for Z1B and Z3.

12:00 All personnel break for lunch.

12:30 Return from lunch.

Continue restoration in all areas, including, hand grading, raking and grass seed application, begin connecting AS Legs to AS Trailer, and begin anchoring and connecting hoses to manifold groups for Z1B and Z3.

Finish connecting hoses to manifold boxes for manifold group Z2 and finish hooking up electrical conduit from stub-up to electrical control panel inside AS Trailer.

16:15 Clean up and secure site.

16:30:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1 Direction: West Description: View of manifold group Z2 with ASWs connected to some manifold boxes.	
Photograph No. 2 Direction: NA Description: View of galvanized pipe being threaded for connection of AS Legs to the AS Trailer.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/12/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of electrical conduit used to connect to the below grad electrical conduit to the AS Trailer through the bottom of the AS Trailer.



Photograph No. 4

Direction: Northeast

Description: View of electrical conduit from AS Trailer Floor to bottom of electrical control panel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 74º - 86º, clear, wind 3 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Breeding	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator
Josue Kadima	FECC	Laborer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues final restoration in all areas, including, hand grading, raking and grass seed application, connecting AS Legs to the AS Trailer, and anchoring and connecting hoses to manifolds in manifold groups Z1B and Z3.

8:30 Final two manifold boxes delivered to site.

12:00 All personnel break for lunch.

12:30 Return from lunch.

Continue final restoration in all areas, including, hand grading, raking and grass seed application, connecting AS Legs to the AS Trailer, and anchoring and connecting hoses to manifolds in manifold groups Z1B and Z3.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of constructing the AS Trailer and AS Leg connections.



Photograph No. 2

Direction: Southwest

Description: View of manifold group Z1B.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/13/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of constructing the AS Trailer and AS Leg connections.



Photograph No. 4

Direction: Northeast

Description: View of final two manifold boxes placed on pads for manifold group Z1B (manifold group Z3 in background).



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 71º - 85º, clear, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Breeding	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator
Josue Kadima	FECC	Laborer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/14/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues final restoration in all areas, connecting AS Legs to AS Trailer, and anchoring and connecting hoses to manifold boxes for manifold groups Z1B and Z3.

12:00 All personnel break for lunch.

12:30 Return from lunch.

Continue final restoration in all areas, connecting AS Legs to AS Trailer, and anchoring and connecting hoses to manifold boxes for manifold groups Z1B and Z3.

15:15 Clean up and secure site.

15:30 All personnel depart site.

No photos taken today.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 68º - 82º, thunderstorms in the afternoon, wind 3 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Alex Breeding	FECC	Tech
Angelo Ippollito	FECC	Superintendent
Nick Alban	FECC	Laborer
John Livingston	FECC	Operator
Jacob Weaver	FECC	Operator
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
John Stumpff	FECC	Operator
Parker Duttenhauer	FECC	Operator
Josue Kadima	FECC	Laborer

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew continues final restoration in all areas.

Finish connecting AS Legs to AS Trailer.
Finish anchoring and connecting hoses to manifold boxes for manifold groups Z1B and Z3.
Finish backfilling trenches south of ventilation tunnel.

12:00 All personnel break for lunch.

12:30 Return from lunch.

Finish connecting AS Legs to AS Trailer, anchoring and connecting hoses to manifold boxes for manifold groups Z1B and Z3, and backfilling trenches south of ventilation tunnel.

15:00 Begin heavy rain and Phase II lightning alert.

15:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Southwest

Description: View of 2" HDPE pipe stubbed up to AS Trailer prior to connection to the AS Trailer.



Photograph No. 2

Direction: East

Description: View of 2" and 4" HDPE pipe running from AS Trailer to manifold groups Z1A and Z2.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/15/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of 4" and 2" HDPE pipe running towards the AS Trailer.



Photograph No. 4

Direction: West

Description: View of weather conditions from launch pad upon departure.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 68º - 88º, clear, wind 3 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

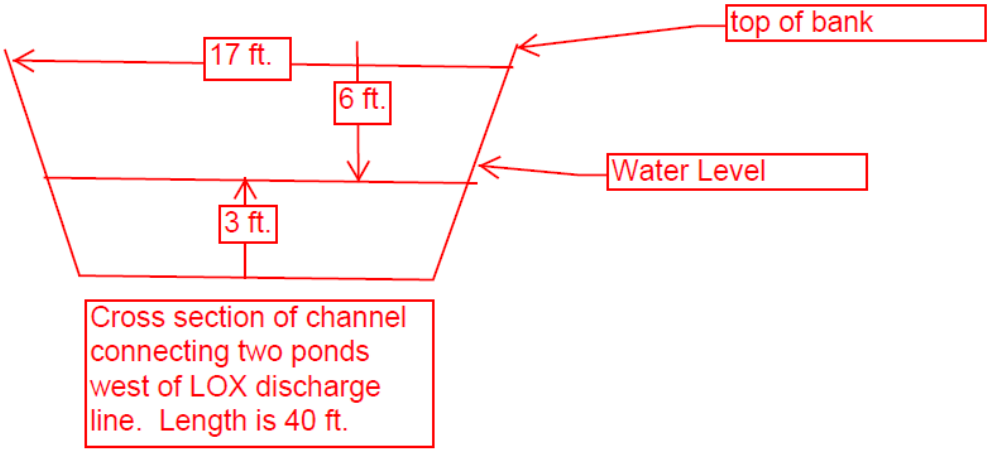
PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives site. FECC has scheduled day off. DMS collects measurement on channel connecting two ponds west of LOX discharge line outside of the Pad area. See drawing below. Channel is accessible by dump truck and loader. Some moderate land clearing is necessary to access channel. Approximately 2.5' to 3.0' of water in channel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: NA

Description: View of west section of channel.



Photograph No. 2

Direction: NA

Description: View of center section of channel.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/16/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3 Direction: East Description: View of eastern section of channel and the pond at the end of the LOX discharge line.	
Photograph No. 4 Direction: North Description: View of access to channel.	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 77º - 87º, clear, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Angelo Ippollito	FECC	Superintendent
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew uses a 185 psi gas-driven air compressor to blow out dirt and construction debris from AS Legs and manifold piping.

12:00 All personnel break for lunch.

12:30 Return from lunch.

Connect AS Legs to all manifold boxes.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

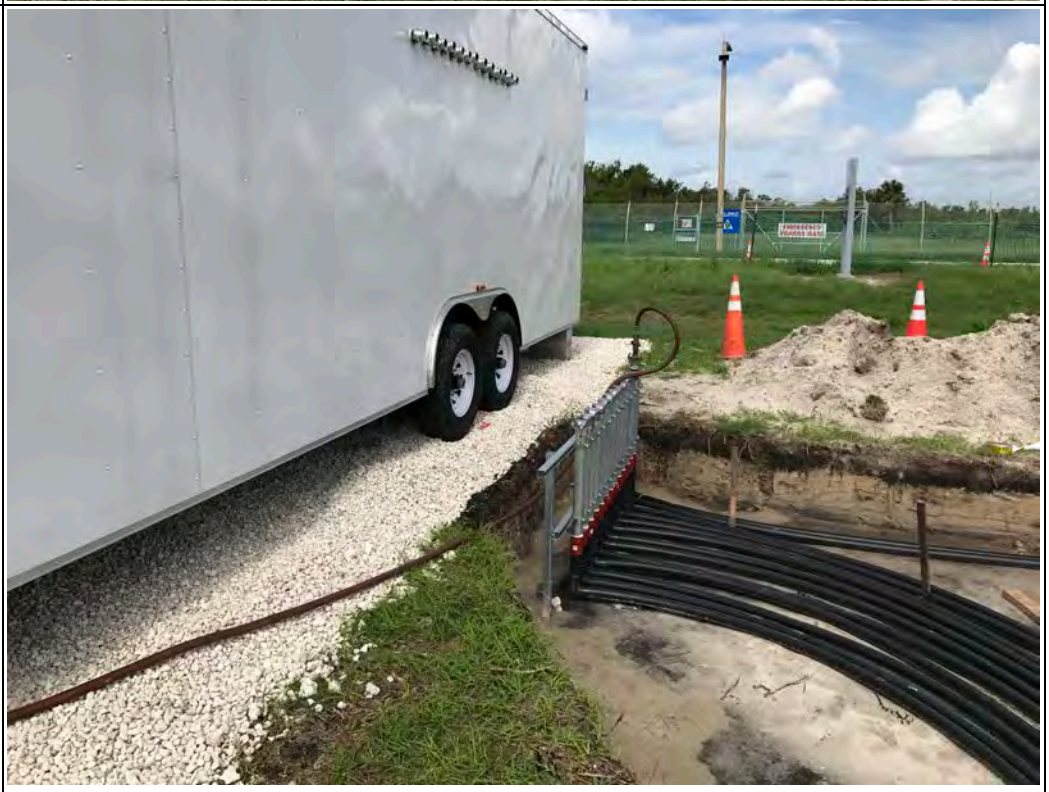
Description: View of 185 psi air compressor used to blow out AS Legs.



Photograph No. 2

Direction: West

Description: View of airline from the 185 psi air compressor connected to an AS Leg. Compressed air was blown into individual AS Legs to clear debris.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

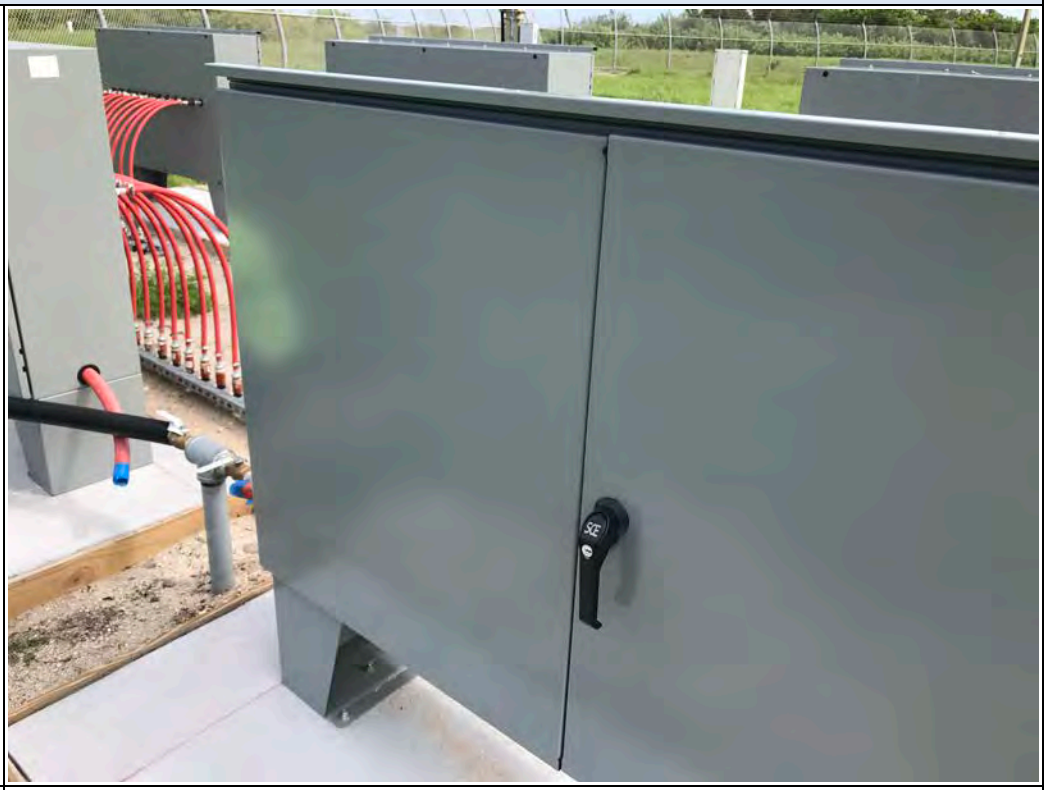
PROJECT: Launch Complex 39B	**DATE:** 6/19/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: NA

Description: View of discharge pipe (black pipe connected to galvanized tee) at the end of AS Leg used to deflect discharge while blowing out AS Legs.



Photograph No. 4

Direction: NA

Description: View of discharge pipe at the end of AS Leg used to deflect discharge while blowing out AS Legs.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 73º - 83º, clear, wind 5 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Angelo Ippollito	FECC	Superintendent
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Fill	54 cubic yards	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew uses 185 psi gas-driven air compressor to leak test all AS leg connection to manifold box and 2" galvanized pipe crossing over escape tunnel.

Fill delivered to site to backfill trench to AS Trailer and low-lying areas across site.

12:00 All personnel break for lunch.

12:30 Return from lunch.

Continue leak testing all AS Leg connections to manifold boxes and 2" galvanized pipe crossing over escape and backfill trench to AS Trailer and low-lying areas across site.

DMS prepares for air-intake tunnel survey to be conducted tomorrow morning.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/20/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: Northeast

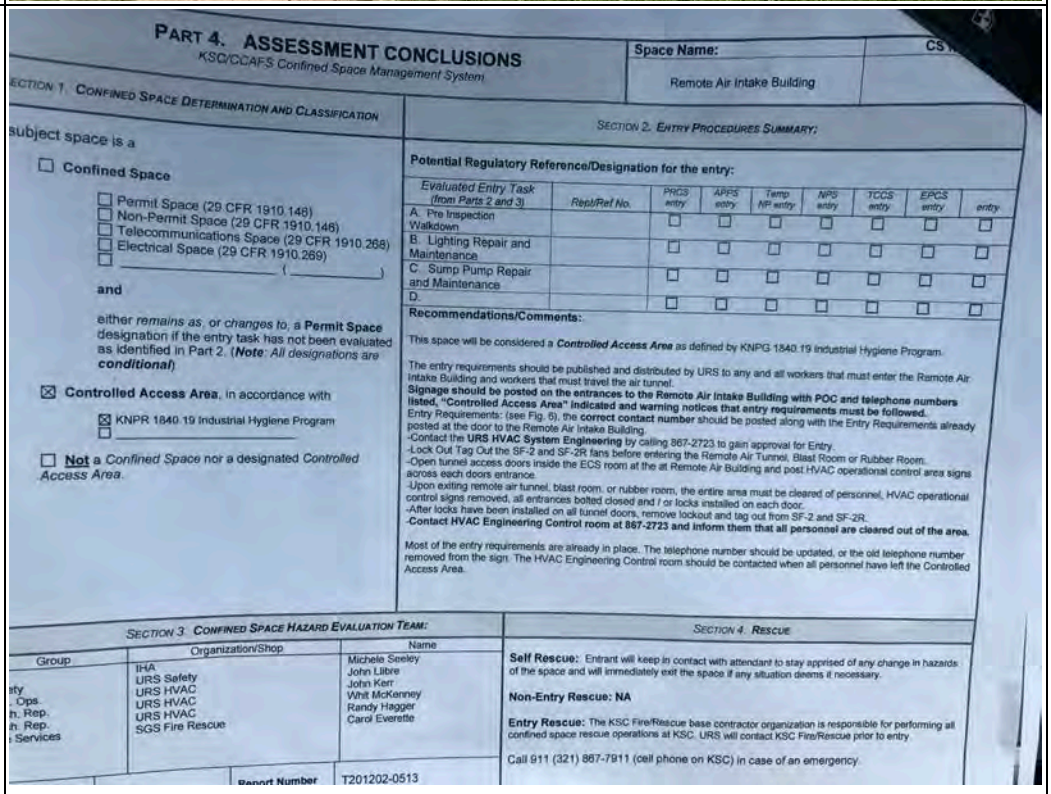
Description: View of fill dirt delivered to site and used for backfilling and site restoration.



Photograph No. 2

Direction: NA

Description: View of procedure for entering air-intake tunnel.



PART 4. ASSESSMENT CONCLUSIONS
KSC/CCAFS Confined Space Management System

Space Name: Remote Air Intake Building

SECTION 1. CONFINED SPACE DETERMINATION AND CLASSIFICATION

subject space is a

☐ Confined Space

☐ Permit Space (29 CFR 1910.146)
☐ Non-Permit Space (29 CFR 1910.146)
☐ Telecommunications Space (29 CFR 1910.268)
☐ Electrical Space (29 CFR 1910.269)
☐ _____ (_____)

and

either *remains as*, or *changes to*, a **Permit Space** designation if the entry task has not been evaluated as identified in Part 2. (***Note**: All designations are **conditional**)*

☒ **Controlled Access Area**, in accordance with

☒ KNPR 1840.19 Industrial Hygiene Program
☐ _____

☐ **Not** a *Confined Space* nor a designated *Controlled Access Area*.

SECTION 2. ENTRY PROCEDURES SUMMARY:

Potential Regulatory Reference/Designation for the entry:

Evaluated Entry Task (from Parts 2 and 3)	Rept/Ref No.	PRCS entry	APPS entry	Temp NP entry	NPS entry	TCCS entry	EPCS entry	entry
A. Pre Inspection Walkdown		☐	☐	☐	☐	☐	☐	☐
B. Lighting Repair and Maintenance		☐	☐	☐	☐	☐	☐	☐
C. Sump Pump Repair and Maintenance		☐	☐	☐	☐	☐	☐	☐
D.		☐	☐	☐	☐	☐	☐	☐

Recommendations/Comments:

This space will be considered a ***Controlled Access Area*** as defined by KNPG 1840.19 Industrial Hygiene Program.

The entry requirements should be published and distributed by URS to any and all workers that must enter the Remote Air Intake Building and workers that must travel the air tunnel.
Signage should be posted on the entrances to the Remote Air Intake Building with POC and telephone numbers listed, "Controlled Access Area" indicated and warning notices that entry requirements must be followed.
Entry Requirements: (see Fig. 6), the **correct contact number** should be posted along with the Entry Requirements already posted at the door to the Remote Air Intake Building.
-Contact the **URS HVAC System Engineering** by calling 867-2723 to gain approval for Entry.
-Lock Out Tag Out the SF-2 and SF-2R fans before entering the Remote Air Tunnel, Blast Room or Rubber Room.
-Open tunnel access doors inside the ECS room at the at Remote Air Building and post HVAC operational control area signs across each doors entrance.
-Upon exiting remote air tunnel, blast room, or rubber room, the entire area must be cleared of personnel, HVAC operational control signs removed, all entrances bolted closed and / or locks installed on each door.
-After locks have been installed on all tunnel doors, remove lockout and tag out from SF-2 and SF-2R.
-Contact HVAC Engineering Control room at 867-2723 and inform them that all personnel are cleared out of the area.

Most of the entry requirements are already in place. The telephone number should be updated, or the old telephone number removed from the sign. The HVAC Engineering Control room should be contacted when all personnel have left the Controlled Access Area.

SECTION 3. CONFINED SPACE HAZARD EVALUATION TEAM:

Group	Organization/Shop	Name
ty	IHA	Michele Seeley
Ops.	URS Safety	John Llibre
h. Rep.	URS HVAC	John Kerr
h. Rep.	URS HVAC	Whit McKenney
Services	URS HVAC	Randy Hagger
	SGS Fire Rescue	Carol Everette

Report Number T201202-0513

SECTION 4. RESCUE

Self Rescue: Entrant will keep in contact with attendant to stay apprised of any change in hazards of the space and will immediately exit the space if any situation deems it necessary.

Non-Entry Rescue: NA

Entry Rescue: The KSC Fire/Rescue base contractor organization is responsible for performing all confined space rescue operations at KSC. URS will contact KSC Fire/Rescue prior to entry.

Call 911 (321) 867-7911 (cell phone on KSC) in case of an emergency.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 73º - 86º, clear, wind 4 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Angelo Ippollito	FECC	Superintendent
Dustin	FECC	Tech
Fritz Nereus	FECC	Operator
Parker Duttenhauer	FECC	Operator
Ben Coppenger	Geosyntec	Senior Staff

VISITOR'S NAME	COMPANY
Mike Deliz	NASA
Eric Sager	Geosyntec

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
Fill	54 cubic yards	

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/21/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS and Ben Coppenger arrive on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 Fill delivered to site and used to finish backfilling trenches to AS Trailer, begin touching up scratches on manifold boxes with primer and paint.

Eric Sager of Geosyntec on site.

DMS and Ben Coppenger preform baseline air sampling and air-intake tunnel survey. See separate field notes for details on air sampling and tunnel survey.

9:00 Mike Deliz of NASA onsite.

11:00 Eric Sager and Mike Deliz depart site.

12:00 All personnel break for lunch.

12:30 Return from lunch.

15:15 FECC crew clean up and secure site.

15:30 FECC personnel depart site.

DMS and Ben Coppenger continue tunnel survey.

17:15 DMS and Ben Coppenger depart site.

No photos included – separate field notes used to document the primary field activities completed today.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 80º - 91º, p. cloudy, wind 10 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Angelo Ippollito	FECC	Superintendent
Dustin	FECC	Tech
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC crew on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 FECC crew performs blow-out and leak test for all ASW flow meter assemblies inside manifold boxes with DMS oversight and continue final site restoration and cleanup.

12:00 All personnel break for lunch.

12:30 Return from lunch.

Continue blowout and leak test for all ASW flow meter assemblies inside manifold boxes with DMS oversight and continue final site restoration and cleanup.

16:15 Clean up and secure site.

16:30 All personnel depart site.

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 1

Direction: West

Description: View of AS Legs connected to AS Trailer.



Photograph No. 2

Direction: NA

Description: View of typical ASW flow meter assembly within the manifold boxes.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/22/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**Phase NO.:** 10

SITE PHOTOGRAPHS

Photograph No. 3

Direction: West

Description: View of construction area south of ventilation tunnel (manifold groups Z1B and Z3).



Photograph No. 4

Direction: West

Description: View of manifold group Z2 in foreground and AS Trailer in background.



DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10
CLIENT: NASA	**LOCATION:** Kennedy Space Center, Fl	
CONTRACTOR(S): Geosyntec Consultants (Geosyntec), FECC		
WEATHER: 72º - 83º, clear, wind 3 mph		

ON-SITE PERSONNEL

NAME	COMPANY	POSITION
David Sizemore (DMS)	Geosyntec	Site Manager
Parker Duttenhauer	FECC	Operator

VISITOR'S NAME	COMPANY
None	

EQUIPMENT	SIZE	COMMENTS
Komatsu Loader	WA200	Fork lift attachment
Weber Plate Compactor		
XAS Air Compressor	49hp	
Kobelco	SK355R	Mini-excavator
Mcelroy HDPE welder		
Cat Trackhoe	380	
IHI Mini Excavator	35N	W/ EC90 Hammer attachment

MATERIALS DELIVERED

DESCRIPTION	QTY	CONDITION / COMMENTS
None		

DAILY CONSTRUCTION REPORT

PROJECT AND SITE INFORMATION

PROJECT: Launch Complex 39B	**DATE:** 6/23/17	
DESCRIPTION: Air Sparge Trenching, Piping and Installation	**PROJECT NO.:** FR1352E	**TASK NO.:** 10

SITE CONDITIONS

DESCRIPTION OF WORK

7:00 DMS arrives on site; FECC on site. DMS conducts tailgate meeting and discuss daily activities.

7:30 Final cleanup and prepare for upcoming system startup. Equipment left on site in case it is needed during system startup.

9:45 Depart site.

No photos taken today.

APPENDIX I
COMPACTION TESTING AND CONCRETE COMPRESSIVE STRENGTH TESTING
(FURNISHED ON CD)

JANUARY THROUGH FEBRUARY 2017
COMPACTION TESTING AND CONCRETE COMPRESSIVE STRENGTH TESTING

FIELD TESTING RESULTS

UNIVERSAL
ENGINEERING SCIENCES
Consultants In: Geotechnical Engineering • Environmental Sciences
Geophysical Services • Construction Materials Testing • Threshold Inspection
Building Inspection • Plan Review • Building Code Administration

LOCATIONS
- Atlanta
- Daytona Beach
- Fort Myers
- Fort Pierce
- Gainesville
- Jacksonville
- Kissimmee
- Leesburg
- Miami
- Ocala
- Orlando (Headquarters)
- Palm Coast
- Panama City
- Pensacola
- Rockledge
- Sarasota
- Tampa
- West Palm Beach

Project No.: 0310.1700056.0000

Date Typed: February 17, 2017

Field and Laboratory Report Transmittal Sheet

Client: Fecc, Inc
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
Kennedy Space Center, Brevard County FL

As requested, a representative of Universal Engineering Sciences, Inc. (UES) was at the referenced project to provide construction materials testing services.

The results of the observations and/or tests are summarized on the attached sheets. The reports are numbered as follows: **20309 LBR, 58692 ARD1, 58692 DT1, 58733 ARC1 , 58733 CT1.** We trust this information is sufficient for your immediate needs. If you have any questions, please do not hesitate to contact the undersigned.

Reviewed By:
Universal Engineering Sciences, Inc.
Certificate of Authorization No. 549

cn=Richard E. Hoaglin, P.E., o, ou, email=rhoaglin@universalengineering.com, c=US
2017.02.17 14:22:19 -05'00'

This item has been electronically signed and sealed by Richard E. Hoaglin, P.E. using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



bpazdur@feccorporation.com; fportofe@feccorporation.com; jlivingston@feccorporation.com

UNIVERSAL ENGINEERING SCIENCES
Consultants In: Geotechnical Engineering • Environmental Sciences
Geophysical Services • Construction Materials Testing • Threshold Inspection
Building Inspection • Plan Review • Building Code Administration

820 Brevard Avenue · Rockledge, FL · 32955
321.638.0808 Fax: 321.638.0978

UES Project No: 0310.1700056.0000

UES Report No: 03GI-58594

On-Site Time (hrs): 0.50
Lab Time (hrs): 0.00
Travel Time (hrs): 0.75
Total Time (hrs): 1.25

Activity Report

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Date of Activity: 1/31/17

Technician: Anthony McAlpin

As Requested, a Universal Engineering Sciences Technician was present at the above referenced location for the purpose of picking up a proctor.

UNIVERSAL
ENGINEERING SCIENCES
Consultants In: Geotechnical Engineering -
Environmental Sciences - Construction Materials Testing

820 Brevard Avenue - Rockledge, Florida 32955 - (321) 638-0808

Client No: 0310.1700056.0000

Date: February 3, 2017

REPORT OF MOISTURE DENSITY RELATIONSHIP OF SOIL

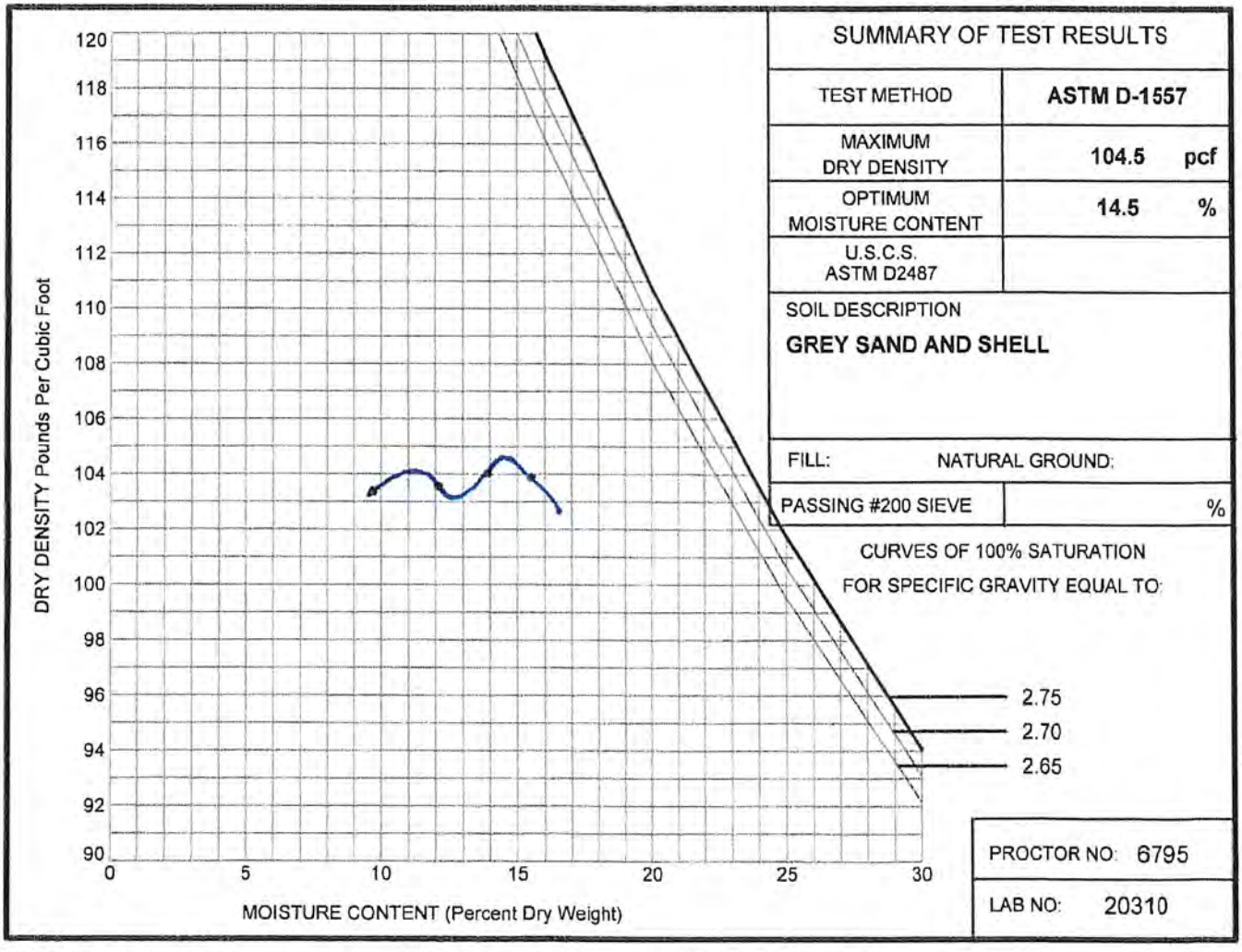
Client: FECC, INC.
3652 OLD WINTER GARDEN ROAD
ORLANDO FLORIDA 32805

Project: LC 39B AIR SPARGE SYSTEM #F-0064

KENNEDY SPACE CENTER, FLORIDA

Location: BACKFILL - FOR PIPE

Date Received: 1/31/17 **Sampled By:** ANTHONY MCALPIN



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820 Brevard Avenue · Rockledge, FL · 32955
321.638.0808 Fax: 321.638.0978

UES Project No: 0310.1700056.0000

UES Report No: 58648 ARD1 020117

On-Site Time (hrs): 0.50
Lab Time (hrs): 0.00
Travel Time (hrs): 0.75
Total Time (hrs): 1.25

Activity Record

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Date of Activity: Wednesday, February 1, 2017

Technician: Anthony McAlpin

As requested, a Universal Engineering Sciences Technician was present at the above referenced project site for the purpose of earthwork testing for the air sparge line NW of liquid oxygen tank.

While on site, the technician observed the general condition of the areas to be tested and performed 2 density test(s) for air sparge line NW of liquid oxygen tank. All test(s) were performed in accordance with the ASTM D-6938 Nuclear Gauge Method and were found to meet the project compaction requirements of 95% of the maximum dry density per ASTM D-1557.

The Contractor was notified of the test results or a copy was left for their records.

This test(s) was performed without deviation from ASTM procedure.

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UES Project No: 0310.1700056.0000

UES Report No: 58648-1 DT 020117

In-Place Density Test Report

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Area Tested: air sparge line NW of liquid oxygen tank

Type of Test: Field: ASTM D-6938 Nuclear Gauge Method
Lab: ASTM D-1557

Date of Test: 02/01/2017

Technician: Anthony McAlpin

Requirements: 95% of Proctor maximum dry density. These tests apply to the fill and/or surficial soil conditions only and do not address the condition of the underlying soils below the tested depths.

Test #	Location of Test	Range (FT)	Depth (IN)	Proctor (2)	Field Dry Density (PCF)	Field Moisture %	% Compaction	Comments (3)
1	middle of airsparge line running east in roadway	0 to 1	12.00	6795	102.8	10.4	98	A
2	middle of airsparge line running North in roadway	0 to 1	12.00	6795	103.1	10.0	99	A

(1) Ref. Datum: 0 = Bottom of Fill

(2)

Proctor #	Maximum Dry Density	Optimum Moisture Content
6795	104.5	14.5

(3) Comments Key
A. Compaction meets min. requirements
B. Compaction does not meet min. requirements
C. Moisture does not meet requirements
D. Recompaction required
E. Recompacted, Retested, Meets Requirements

This test was performed without deviation from ASTM procedures.

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UES Project No: 0310.1700056.0000

UES Report No: 58692 ARD1 020217

On-Site Time (hrs): 0.75
Lab Time (hrs): 0.00
Travel Time (hrs): 0.75
Total Time (hrs): 1.50

Activity Record

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Date of Activity: Thursday, February 2, 2017

Technician: Anthony McAlpin

As requested, a Universal Engineering Sciences Technician was present at the above referenced project site for the purpose of earthwork testing for the Roadway airsparge placement..

While on site, the technician observed the general condition of the areas to be tested and performed 1 density test(s) for Roadway airsparge placement. All test(s) were performed in accordance with the ASTM D-6938 Nuclear Gauge Method and were found to meet the project compaction requirements of 95% of the maximum dry density per ASTM D-1557.

The Contractor was notified of the test results or a copy was left for their records.

This test(s) was performed without deviation from ASTM procedure.

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UES Project No: 0310.1700056.0000

UES Report No: 58692-1 DT 020217

In-Place Density Test Report

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Area Tested: Roadway airsparge placement

Type of Test: Field: ASTM D-6938 Nuclear Gauge Method **Date of Test:** 02/02/2017
Lab: ASTM D-1557

Technician: Anthony McAlpin

Requirements: 95% of Proctor maximum dry density. These tests apply to the fill and/or surficial soil conditions only and do not address the condition of the underlying soils below the tested depths.

Test #	Location of Test	Range (FT)	Depth (IN)	Proctor (2)	Field Dry Density (PCF)	Field Moisture %	% Compaction	Comments (3)
1	middle of air sparge run south of Liquid oxygen tank	0 to 1	12.00	6795	102.0	8.5	98	A

(1) Ref. Datum: 0 = Bottom of Fill

(2)

Proctor #	Maximum Dry Density	Optimum Moisture Content
6795	104.5	14.5

(3) Comments Key
A. Compaction meets min. requirements
B. Compaction does not meet min. requirements
C. Moisture does not meet requirements
D. Recompaction required
E. Recompacted, Retested, Meets Requirements

This test was performed without deviation from ASTM procedures.

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UES Project No: 0310.1700056.0000

UES Report No: 58733 ARC1 020317

On-Site Time (hrs): 2.50
Lab Time (hrs): 0.00
Travel Time (hrs): 2.00
Total Time (hrs): 4.50

Activity Record

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Date of Activity: Friday, February 3, 2017

Technician: Mark Linden

As requested, a Universal Engineering Sciences Technician was present at the above referenced project site for the purpose of concrete testing for the Air sparge duct bank.

While on site, the technician observed the general condition of the areas to be tested and cast 1 set(s) of 4 - 4 x 8 specimen(s) for compressive strength testing. The concrete tested on this day was found to be in accordance with the project plans and specifications with regard to air content, batch time, slump, and temperature.

There was 1.5 hours of standby time onsite.

The Contractor was notified of the test results or a copy was left for their records.

This test(s) was performed without deviation from ASTM procedure.

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Project No: 0310.1700056.0000
Report No.: 58733-1 CT 020317
Workorder No.: 58733
Lab No.:
Date 1st Issue:
Date 2nd Issue:
DateFinal Issue:

Compressive Strength of 4" x 8" Cylinder Test Specimens (ASTM C-39)

Client: FECC, Inc.
3652 Old Winter Garden Road, Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Structural Element: Duct bank
Sample Location: Air sparge duct bank - Sampled at Western duct bank

Set #: 1 of 1 total sets **Sample From** Concrete Truck **Sample By:** Mark Linden On 02/03/2017

General Information		Specified Strength /Sampling Times		Placement Information	
General Contractor	FEDD Inc.	Specified Strength	4000 psi @ 28 days	Truck Load:	6 cu yds.
Supplier:	Titan	Mix DesignStrength	4000 psi @ 28 days	Cumulative Quantity:	6 cu yds.
Truck Number:	1503	Water Added at Site	N/A	Total Placement for the Day:	6 cu yds.
Ticket Number:	184504	Time Batched:	2:10 PM		
Mix Design:	CAJB5R10	Time Sampled:	3:20 PM		
Admixture:	N/A	Weather Condition	Partly Cloudy		

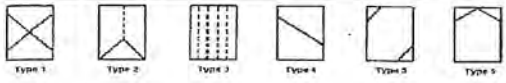
Field Test Results

Air Content: 1.10 %	Slump: 5.00 inches	Ambient Temp: 69 °F	Concrete Temp: 78 °F	Unit Weight: N/A

Results Of Laboratory Testing

Test Results	Date Tested	Age Days	Type Of Fracture	Actual Dimen. 1 (in)	Actual Dimen. 2 (in)	Avg. Dimen. (in)	Test X-Sect. Area (in²)	Max. Compressive Load (lbs)	Test Compressive Strength (psi)	Average (psi)
1	02/10/2017	7	6	4.05	4.00	4.03	12.76	62,518	4,900	-
2	03/03/2017	28	-	-	-	-	-	-	-	-
3	03/03/2017	28	-	-	-	-	-	-	-	-
4	03/03/2017	28	-	-	-	-	-	-	-	-

REMARKS This form conforms with ASTM C39, Sampling and testing procedures were performed in general compliance with ASTM C31, C138, C143, C172, C231, C511, C617, C1064, C1231, C42, C157, C192, C403 and / or C496 as applies. If an air test was not completed, that deviates from C31 procedure. During initial field curing; some samples are kept at temperatures outside the allowable range, allowed to dry, or are left in the field for longer than 24 hours. This is a deviation of ASTM C31 procedures. This report shall not be reproduced, except in full, without the written approval of Universal Engineering



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Client No: 0310.1700056.0000

Date: 2/9/17

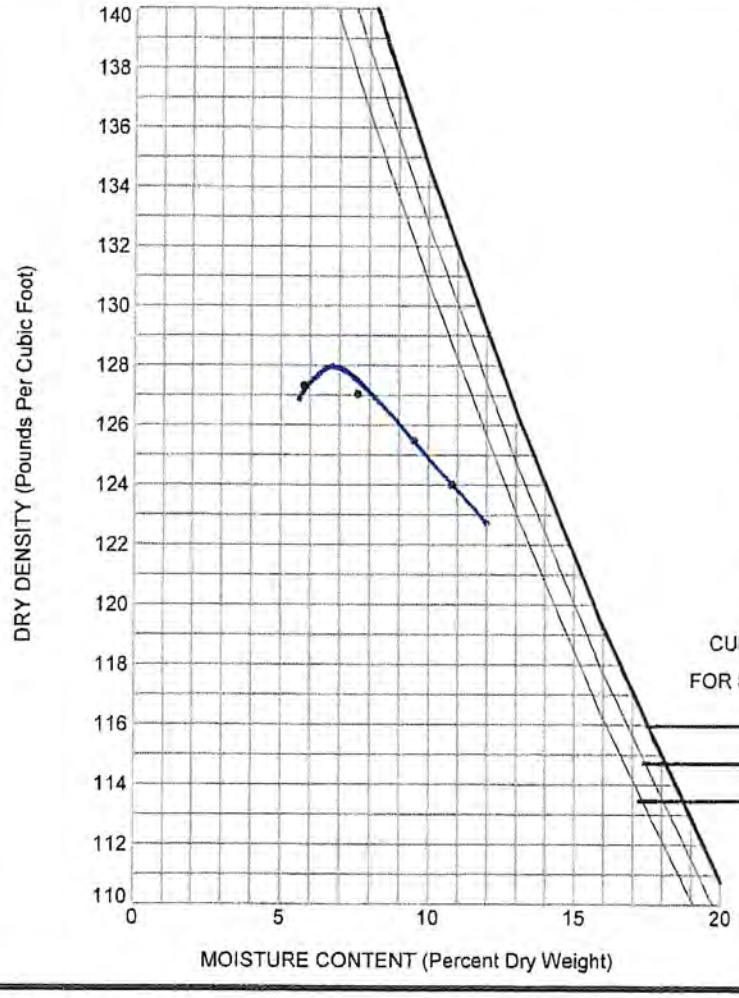
REPORT OF LIMEROCK BEARING RATIO

Client: FECC, INC.
3652 OLD WINTER GARDEN ROAD
ORLANDO, FLORIDA 32805

Project: LC 39B AIR SPARGE SYSTEM

KENNEDY SPACE CENTER, FLORIDA

Location: BASE - STOCKPILE
Date Sampled: 1/31/17 **Sampled By:** ANTHONY MCALPIN



SUMMARY OF TEST RESULTS		
TEST METHOD	FM 5-515 LBR	
MAXIMUM DRY DENSITY	128.0	pcf
OPTIMUM MOISTURE CONTENT	7.0	%
U.S.C.S.		
SOIL DESCRIPTION: LIMEROCK		
FILL:	NATURAL GROUND:	
PASSING #200 SIEVE		%
CORRECTED LBR	160	

CURVES OF 100% SATURATION
FOR SPECIFIC GRAVITY EQUAL TO:
2.75
2.70
2.65

PROCTOR NO. 6800
LAB NO: 20309

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UES Project No.: 0310.1700056.0000
Date Typed: May 12, 2017

Construction Materials Testing Services
FIELD AND LABORATORY REPORT COVER PAGE

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

As requested, Universal Engineering Sciences, Inc. (UES) representative(s) performed construction materials testing and/or field inspection services on the above project. Testing results and/or inspection observations are reported on the attached sheets. The contents of this package are summarized below:

Scope of Work

Work Order No.	Date	Type of Report
61951-1	02/02/2017	In-Place Density Test Report w/Activity Record

We hope this information is sufficient for your immediate needs. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,
Universal Engineering Sciences, Inc.
Certificate of Authorization No. 00000549



Richard E. Hoaglin, P.E.
2017.05.12
16:47:19 -04'00'

Richard E. Hoaglin, P.E.
FLORIDA
Professional Engineer No. 48796

Attachments (1)

This item has been electronically signed and sealed by Richard E. Hoaglin, P.E. using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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UES Project No: 0310.1700056.0000
UES DOCS No:
UES Report No: 61951-1 DT 020217

In-Place Density Test Report

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Area Tested: base course

Type of Test: Field: ASTM D-6938 Nuclear Gauge Method **Date of Test:** 02/02/2017
Lab: ASTM D1557 Modified Proctor

Technician: Anthony McAlpin

Requirements: 98% of Proctor maximum dry density. These tests apply to the fill and/or surficial soil conditions only and do not address the condition of the underlying soils below the tested depths.

Test No.	Location of Test	Range	Depth (inch)	Proctor (2)	Field Dry Density (PCF)	Field Moisture %	% Compaction	Comments (3)
1	Road repair NW of LO2 tank	0 to -6 inch	6.00	20309	127.2	6.9	99	A
2	Road repair NW of LO2 tank	0 to -6 inch	6.00	20309	125.3	5.4	98	A

(1) Ref. Datum: 0 = Top of Base Course

(2)

Proctor #	Maximum Dry Density	Optimum Moisture Content
20309	128.0	7.0

(3) Comments Key

A. Compaction meets min. requirements
B. Compaction does not meet min. requirements
C. Moisture does not meet requirements
D. Recompaction required
E. Recompacted, Retested, Meets Requirements

This test was performed without deviation from ASTM procedures.

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LOCATIONS
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- Fort Pierce
- Gainesville
- Jacksonville
- Kissimmee
- Leesburg
- Miami
- Ocala
- Orlando (Headquarters)
- Palm Coast
- Panama City
- Pensacola
- Rockledge
- Sarasota
- Tampa
- West Palm Beach

Project No.: 0310.1700056.0000

Date Typed: February 8, 2017

Field and Laboratory Report Transmittal Sheet

Client: Fecc, Inc
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
Kennedy Space Center, Brevard County FL

As requested, a representative of Universal Engineering Sciences, Inc. (UES) was at the referenced project to provide construction materials testing services.

The results of the observations and/or tests are summarized on the attached sheets. The reports are numbered as follows: **58594 AR1, 20310 MP, 58648 ARD1, 58648 DT1.** We trust this information is sufficient for your immediate needs. If you have any questions, please do not hesitate to contact the undersigned.

Reviewed By:
Universal Engineering Sciences, Inc.
Certificate of Authorization No. 549

cn=Richard E. Hoaglin, P.E., o,
ou,
email=rhoaglin@universalengineering.com, c=US
2017.02.10 09:59:30 -05'00'

This item has been electronically signed and sealed by Richard E. Hoaglin, P.E. using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

RICHARD E. HOAGLIN LICENSE NO. 48796 STATE OF FLORIDA PROFESSIONAL ENGINEER

bpazdur@feccorporation.com; fportofe@feccorporation.com; jlivingston@feccorporation.com

MAY 2017
COMPACTION TESTING AND CONCRETE COMPRESSIVE STRENGTH TESTING

FIELD TESTING RESULTS

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UES Project No.: 0310.1700056.0000
Date Typed: May 31, 2017

Construction Materials Testing Services
FIELD AND LABORATORY REPORT COVER PAGE

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

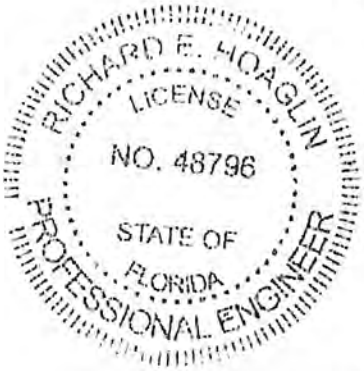
As requested, Universal Engineering Sciences, Inc. (UES) representative(s) performed construction materials testing and/or field inspection services on the above project. Testing results and/or inspection observations are reported on the attached sheets. The contents of this package are summarized below:

Scope of Work

Work Order No.	Date	Type of Report
62017-1	05/16/2017	In-Place Density Test Report w/Activity Record
62017-2	05/16/2017	In-Place Density Test Report w/Activity Record
62045-1	05/17/2017	4" x 8" Cylinder Test Specimens Report w/Activity Record

We hope this information is sufficient for your immediate needs. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,
Universal Engineering Sciences, Inc.
Certificate of Authorization No. 00000549



Richard E. Hoaglin, P.E.
2017.06.08
11:18:50
-04'00'

Richard E. Hoaglin, P.E.
FLORIDA
Professional Engineer No. 48796

Attachments (3)

This item has been electronically signed and sealed by Richard E. Hoaglin, P.E. using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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UES Project No: 0310.1700056.0000
UES DOCS No:
UES Report No: 62017-1 ARC 051617

On-Site Time (hrs): 1.00
Lab Time (hrs): 0.00
Travel Time (hrs): 2.00
Total Time (hrs): 3.00

Activity Record

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Date of Activity: Tuesday, May 16, 2017

Technician: Mark Linden

As requested, a Universal Engineering Sciences Technician was present at the above referenced project site for the purpose of earthwork testing for the Access road East and West trench/South parking lot trench, Access road E and W trenches, S. parking lot trench.

While on site, the technician observed the general condition of the areas to be tested and performed 3 density test(s) for Access road East and West trench/South parking lot trench. All test(s) were performed in accordance with the ASTM D-6938 Nuclear Gauge Method and were found to meet the project compaction requirements of 98% of the maximum dry density per ASTM D-1557.

While on site, the technician observed the general condition of the areas to be tested and performed 3 density test(s) for Access road E and W trenches, S. parking lot trench. All test(s) were performed in accordance with the ASTM D-6938 Nuclear Gauge Method and were found to meet the project compaction requirements of 98% of the maximum dry density per ASTM D-1557.

The Contractor was notified of the test results or a copy was left for their records.

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UES Project No: 0310.1700056.0000
UES DOCS No:
UES Report No: 62017-1 DT 051617

In-Place Density Test Report

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Area Tested: Access road East and West trench/South parking lot trench

Type of Test: Field: ASTM D-6938 Nuclear Gauge Method **Date of Test:** 05/16/2017
Lab: ASTM D1557 Modified Proctor

Technician: Mark Linden

Requirements: 98% of Proctor maximum dry density. These tests apply to the fill and/or surficial soil conditions only and do not address the condition of the underlying soils below the tested depths.

Test No.	Location of Test	Range	Depth (inch)	Proctor (2)	Field Dry Density (PCF)	Field Moisture %	% Compaction	Comments (3)
1	Eastern trench center	0 to -6 inch	6.00	20309	127.2	6.1	99	A
2	Western trench center	0 to -6 inch	6.00	20309	126.5	5.7	99	A
3	Southern trench center	0 to -6 inch	6.00	20309	127.0	6.4	99	A

(1) Ref. Datum: 0 = Top of Base Course

(2)

Proctor #	Maximum Dry Density	Optimum Moisture Content
20309	128.0	7.0

(3) Comments Key

A. Compaction meets min. requirements
B. Compaction does not meet min. requirements
C. Moisture does not meet requirements
D. Recompaction required
E. Recompacted, Retested, Meets Requirements

This test was performed without deviation from ASTM procedures.

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UES Project No: 0310.1700056.0000
UES DOCS No:
UES Report No: 62017-2 DT 052517

In-Place Density Test Report

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Area Tested: Access road E and W trenches, S. parking lot trench

Type of Test: Field: ASTM D-6938 Nuclear Gauge Method **Date of Test:** 05/25/2017
Lab: ASTM D1557 Modified Proctor

Technician: Mark Linden

Requirements: 98% of Proctor maximum dry density. These tests apply to the fill and/or surficial soil conditions only and do not address the condition of the underlying soils below the tested depths.

Test No.	Location of Test	Range	Depth (inch)	Proctor (2)	Field Dry Density (PCF)	Field Moisture %	% Compaction	Comments (3)
4	East trench edge	0 to -1 ft	12.00	20310	103.2	12.6	99	A
5	West trench edge	0 to -1 ft	12.00	20310	103.0	13.2	99	A
6	S. parking lot trench edge	0 to -1 ft	12.00	20310	102.4	12.7	98	A

(1) Ref. Datum: 0 = Top of Fill

(2)

Proctor #	Maximum Dry Density	Optimum Moisture Content
20310	104.5	14.5

(3) Comments Key

A. Compaction meets min. requirements
B. Compaction does not meet min. requirements
C. Moisture does not meet requirements
D. Recompaction required
E. Recompacted, Retested, Meets Requirements

This test was performed without deviation from ASTM procedures.

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UES Project No: 0310.1700056.0000
UES DOCS No:
UES Report No: 62045-1 ARC 051717

On-Site Time (hrs): 1.50
Lab Time (hrs): 0.00
Travel Time (hrs): 1.00
Total Time (hrs): 2.50

Activity Record

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Date of Activity: Wednesday, May 17, 2017

Technician: Mark Linden

As requested, a Universal Engineering Sciences Technician was present at the above referenced project site for the purpose of concrete testing for the E and W access road and S parking lot.

While on site, the technician observed the general condition of the areas to be tested and cast 1 set(s) of 4 - 4 x 8 specimen(s) for compressive strength testing. The concrete tested on this day was found to be in accordance with the project plans and specifications with regard to batch time, slump, and temperature.

There were 30 minutes of standby time onsite.

The Contractor was notified of the test results or a copy was left for their records.

UNIVERSAL ENGINEERING SCIENCES
Consultants In: Geotechnical Engineering • Environmental Sciences
Geophysical Services • Materials Testing • Threshold Inspection
Building Code Administration, Compliance Inspection & Plan Review
820 Brevard Avenue, Rockledge, FL 32955 - P: 321.638.0808 - F: 321.638.0978

Project No: 0310.1700056.0000
ReportNo.: 62045-1 CT 051717
WorkorderNo.: 62045
Lab No.:

Compressive Strength of 4" x 8" Cylinder Test Specimens (ASTM C-39)

Client: FECC, Inc.
3652 Old Winter Garden Road, Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

Structural Element: Slab on Grade

Sample Location: E and W access road and S parking lot - Sampled at East trench in access road

Set # 1 of 1 **Sample From:** Concrete Truck **Sample By:** Mark Linden On 05/17/2017 **Delivered to Lab On:** 05/18/2017

General Information
General Contractor: FECC Inc
Supplier: Cemex
Truck Number: 24512
Ticket Number: 35060548
Mix Design: 1568753
Admixture: N/A

Specified Strength / Sampling Times
Specified Strength: 4000 psi @ 28 days
Mix Design Strength: 4000 psi @ 28 days
Water Added at Site: N/A
Time Batched: 1:01 PM
Time Sampled: 2:25 PM
Weather Condition: Partly Cloudy

Placement Information
Truck Load: 7.00 cu yds.
Cumulative Quantity: 7.00 cu yds.
Total Placement for the Day: 7.00 cu yds.

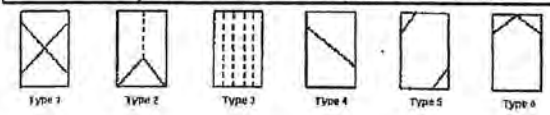
Field Test Results

Air Content: N/A	Slump: 4.50 inches	Ambient Temp: 80 ºF	Concrete Temp: 84 ºF	Unit Weight: N/A

Results of Laboratory Testing

Test Results	Date Tested	Age Days	Type Of Fracture	Actual Dimen. 1 (in)	Actual Dimen. 2 (in)	Avg. Dimen. (in)	Test X-Sect. Area (in²)	Max Compressive Load (lbs)	Test Compressive Strength (psi)	Average (psi)
1	05/24/2017	7	5	4.01	4.01	4.01	12.63	57,254	4,530	-
2	06/14/2017	28	-	-	-	-	-	-	-	-
3	06/14/2017	28	-	-	-	-	-	-	-	-
4	06/14/2017	28	-	-	-	-	-	-	-	-

Remarks This form conforms with ASTM C39, Sampling and testing procedures were performed in general compliance with ASTM C31, C138, C143, C172, C231, C511, C617, C1064, C1231, C42, C157, C192, C403 and / or C496 as applies. If an air test was not completed, that deviates from C31 procedure. During initial field curing; some samples are kept at temperatures outside the allowable range, allowed to dry, or are left in the field for longer than 24 hours. This is a deviation of ASTM C31 procedures. This report shall not be reproduced, except in full, without the written approval of Universal Engineering Sciences.



FIELD REPORT

PROJECT: LC-39B Air Sparge System F-0064
PROJECT #: 1700056
DATE: 5.16.17 Tues.
CLIENT: FECC Inc.
WEATHER: P. cloudy
CONTACT: Shane
ARRIVAL TIME: 3:00pm
DEPARTURE TIME: 6:00pm
ON SITE TIME: 1hr
TRAVEL TIME: 1hr + 45m
LAB TIME:
EQUIPMENT CHARGE:
TRAVEL CHARGE:
MILEAGE:
SCOPE OF FIELD WORK:

GENERAL

As requested, a Universal Engineering Technician was present at the above referenced location for the purpose of

EARTHWORK

As requested, a Universal Engineering Technician was present at the above referenced location for the purpose of Earthwork Testing for the
Ent W access road / S. Parking lot

As requested, the technician observed the general condition of the area(s) to be tested and performed 6 soil density test(s). All test(s) were performed in accordance with the ~~(nuclear gauge~~ / drive sleeve / sand cone) method and were found to (meet / not meet / pending proctor) the project compaction requirements of 98% of the maximum dry density per (~~ASTM D1557~~ / D698) (AASHTO T-180 / T-99) (with the exception of test number(s) _____ that failed to meet the project compaction requirements due to

6" rock center
12" soil edges

CONCRETE / GROUT / MORTAR

As requested, a Universal Engineering Technician was present at the above referenced location for the purpose of (Concrete / Grout / Mortar) (Monitoring / Testing) for the

While on site, the technician observed the general condition of the area(s) to be tested and cast _____ sets of _____ (cylinders / beams / prisms / cubes) for (compressive / flexural strength) testing. The (concrete / grout / mortar) (tested / observed) on this day was found to be in accordance with the project plans and specifications with regard to batch time, temperature and slump (with the exception of the concrete batch referenced by ticket number _____, which was found to exceed tolerance for

Universal Engineering Sciences, Inc.
820 Brevard Avenue
Rockledge, FL 32955
321.638.0808 phone
321.638.0978 fax

ON SITE TIME:
LESS # SETS ___X 1 HR:
LESS # IPDS ___X .25 HR:
STAND BY TIME:
BILLING:

TECHNICIAN:
CONTACT:

UNIVERSAL ENGINEERING SCIENCES
Consultants In: Geotechnical Engineering • Environmental Sciences
Geophysical Services • Materials Testing • Threshold Inspection
Building Code Administration, Compliance Inspection & Plan Review
820 Brevard Avenue, Rockledge, FL 32955 - P: 321.638.0808 - F: 321.638.0978

UES Project No.: 0310.1700056.0000
Date Typed: June 16, 2017

Construction Materials Testing Services
FIELD AND LABORATORY REPORT COVER PAGE

Client: FECC, Inc.
3652 Old Winter Garden Road
Orlando, FL 32805

Project: LC 39B Air Sparge System #F-0064
, Kennedy Space Center, Brevard County, FL

As requested, Universal Engineering Sciences, Inc. (UES) representative(s) performed construction materials testing and/or field inspection services on the above project. Testing results and/or inspection observations are reported on the attached sheets. The contents of this package are summarized below:

Scope of Work

Work Order No.	Date	Type of Report
62045-1	05/17/2017	4" x 8" Cylinder Test Specimens Report

We hope this information is sufficient for your immediate needs. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,
Universal Engineering Sciences, Inc.
Certificate of Authorization No. 00000549



Richard E. Hoaglin, P.E.
2017.06.22
08:05:38 -04'00'

Richard E. Hoaglin, P.E.
FLORIDA
Professional Engineer No. 48796

This item has been electronically signed and sealed by Richard E. Hoaglin, P.E. using a Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

FIELD REPORT

PROJECT: LCI 39B Airspace System

PROJECT #: 700056

CLIENT: FECC Inc.

DATE: 5.17.17 wed.

WEATHER: P. cloudy

CONTACT:

ARRIVAL TIME: 1:00pm DEPARTURE TIME: 2:30pm

ON SITE TIME: TRAVEL TIME: 1hr LAB TIME:

EQUIPMENT CHARGE: TRAVEL CHARGE: MILEAGE:

SCOPE OF FIELD WORK:

GENERAL

As requested, a Universal Engineering Technician was present at the above referenced location for the purpose of

EARTHWORK

As requested, a Universal Engineering Technician was present at the above referenced location for the purpose of Earthwork Testing for the

As requested, the technician observed the general condition of the area(s) to be tested and performed _____ soil density test(s). All test(s) were performed in accordance with the (nuclear gauge / drive sleeve / sand cone) method and were found to (meet / not meet / pending proctor) the project compaction requirements of _____% of the maximum dry density per (ASTM D1557 / D698) (AASHTO T-180 / T-99) (with the exception of test number(s) _____ that failed to meet the project compaction requirements due to

CONCRETE / GROUT / MORTAR

As requested, a Universal Engineering Technician was present at the above referenced location for the purpose of (~~Concrete~~ / ~~Grout~~ / Mortar) (Monitoring / ~~Testing~~) for the E and W access road and S. parking lot

While on site, the technician observed the general condition of the area(s) to be tested and cast 1 sets of 4 (cylinders / beams / prisms / cubes) for (~~compressive~~ / flexural strength) testing. The (concrete / grout / mortar) (~~tested~~ / observed) on this day was found to be in accordance with the project plans and specifications with regard to batch time, temperature and slump (with the exception of the concrete batch referenced by ticket number _____, which was found to exceed tolerance for

Universal Engineering Sciences, Inc.
820 Brevard Avenue
Rockledge, FL 32955
321.638.0808 phone
321.638.0978 fax

ON SITE TIME:

LESS # SETS ___X 1 HR:

LESS # IPDS ___X .25 HR:

STAND BY TIME:

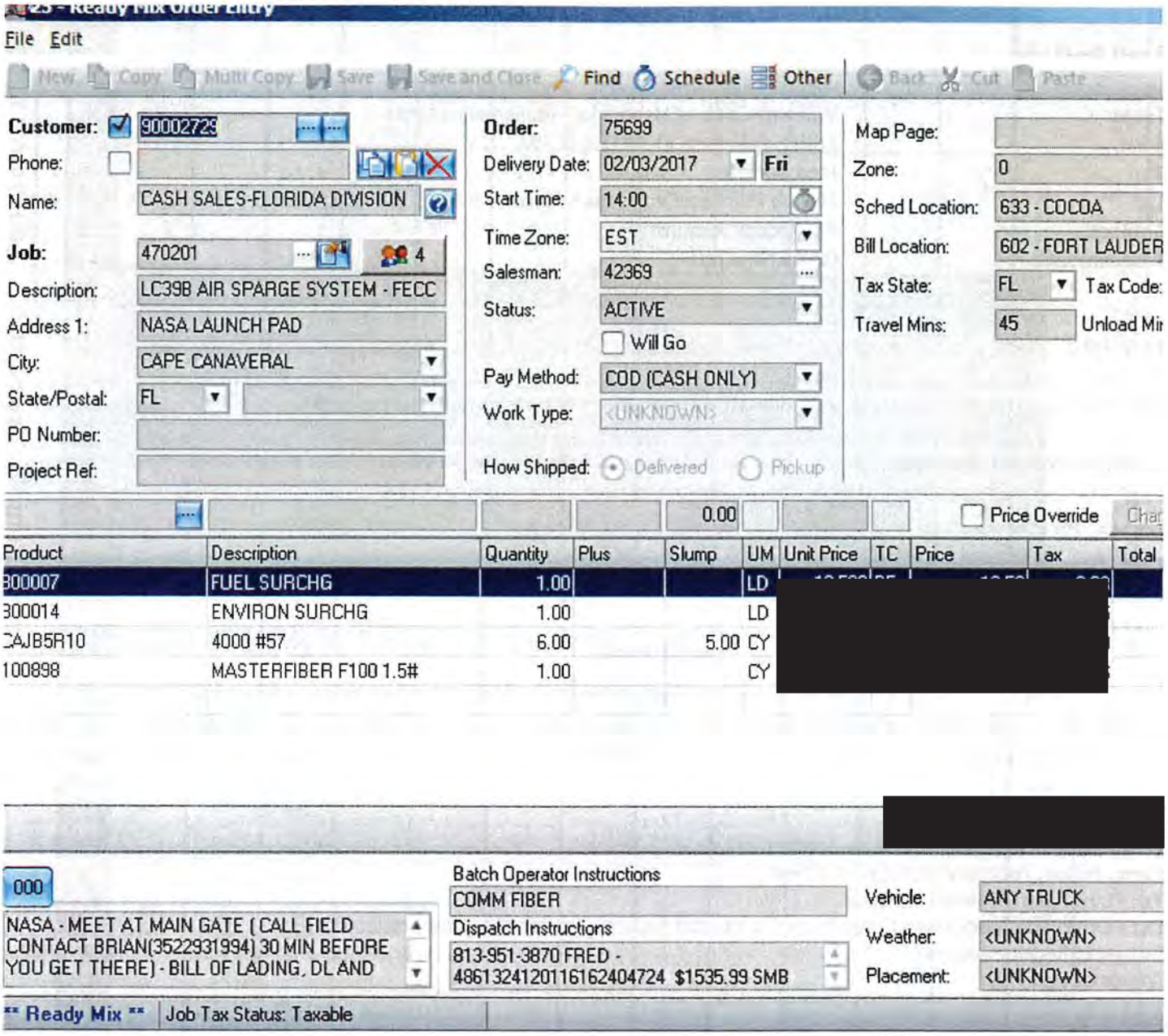
BILLING:

TECHNICIAN: CONTACT:

APPENDIX J
LOAD TICKETS
(FURNISHED ON CD)

CONCRETE

LOAD TICKETS



Nick Vannorsdall
Titan Floirda LLC
Sales Executive
C: 407-466-2701

TITAN AMERICA

Confidentiality Notice: This message including files attached to it, may contain confidential information that is intended only for use of the Addressee(s) names above. If you are not an intended recipient any dissemination or copying of the information contained in this message or the taking of any action in reliance upon the information is strictly prohibited. If you have received this message in error, please notify the sender immediately by return Email or by phone and delete the original transmission and any attachments without reading or saving in any manner. Thank you.

CEMEX

Z 4 8 Z LA Cyan Cold Pad

5399994

13-3'x7'x.5" manifold Pads

2017 MAY

112/1112	7.50						

Customer Code: 3012169 Customer Name: FLORIDA ENVNTL COMPLIANCE CORP

Customer Job Number:

Order Code / Date: 838 05/08/17

Project Code: 4109364 Project Name: LC - 39B - KSC

Project P.O. Number: pending

Order P.O. Number: pending

Ticket Date: 05/08/17 Delivery Address: LC - 39B - KSC

Map Page: Map/Row/Column:

Delivery Instructions: LOOK AHEAD. LAUNCH PAD 39B KENNEDY SPACE CENTER

Dispatcher: rothadell

Plant Number: 350427C1

Due On Job	Slump	Truck Number	Driver Number	Driver Name	End Use
13:30	4.00	10023716	0000B0039	ROY FORBES	UNASSIGNED

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
6.00	6.00	6.00	1595553	4000 PROCR/FIBER FIBRIL-F Y03			
1.00			1247818	FUEL SURCHARGE			
1.00			1202749	ENVIRONMENTAL CHARGE			
1.00			1371258	SERV,PAYLOAD,CHARGE OVER 3 -			

☐ Cash ☐ Check ☐ Charge — Check # / Auth Code:

Signature of Driver Receiving Cash:

Cash Received:

Total COD Order Amount to Collect Without Standby Charges:

Comments:

CONCRETE DISPOSAL FEE

_____ PARTIAL _____ FULL LOAD _____ YARDS

WATER ADDED: _____ GAL. YARDS IN DRUM WHEN ADDED: _____

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY: _____

Notice: Our drivers will make every effort to place materials where the customer designates, but the company assumes no responsibility for damages inside curb or property line. Customer agrees to the terms of sale and delivery and accepts concrete as is. Due to important factors which are out of our control after delivery, this Company will not accept any responsibility for the finished results. No credit for returned concrete. Buyers exceptions and claims shall be deemed waived unless made to us in writing within one business day after the receipt of materials.

SPECIAL TERMS: Any water added is at customers own risk. If water is added on site, concrete strength is no longer guaranteed. WARNING: Product may cause skin and/or eye irritation. CAUTION: Abrasive may be hazardous to wear safety and health. Please refer to the backside of this ticket for important safety handling information, and to the material safety data sheets for additional information.

AUTHORIZED SIGNATURE ⊗ MA Boyd

UNIVERSAL PREV. TRK # INVOICE

CEMEX

2017 JUN 9 AM 10:51

Z1B & Z3
MAUI SOLDPAD
54154694

10-3'x7'x.5" manifold pads

Plant:	Begin Loading:	To Job:	Arrive Job:	Start Unload:	Finish Unload:	Leave Job:	Return Plant:
112/1112	10:51	11:01					

Customer Code: 3012169 Customer Name: FLORIDA ENVMTL COMPLIANCE CORP Customer Job Number: Order Code / Date: 579 06/09/17

Project Code: 41093644 Project Name: LC - 39B - KSC Project P.O. Number: pending Order P.O. Number: F0064

Ticket Date: 06/09/17 Delivery Address: LC - 39B - KSC Map Page: Map/Row/Column:

Delivery Instructions: ST RD 3 NORTH PAST NASA PKWY, RIGHT ON SATURN TOWARDS END FOLLOW SIGNS HYDRATE

Dispatcher: MELVINPEREZ

Ticket Number: 35097919

10-3'x7'x.5" manifold pads

Due On Job:	Slump:	Truck Number:	Driver Number:	Driver Name:	End Use:
12:00	4.00	10064562	15106169	ANTHONY FUSCO	BLDNG: SLAB

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
5.00	5.00	5.00	1695553	4000 PROCK/FIBER FIBRIL-F	YD3		
1.00			1247818	FUEL SURCHARGE			
1.00			1202749	ENVIRONMENTAL CHARGE			
1.00			1571252	SERV,PAYLOAD,CHARGE OVER,3 -			

☐ Cash ☐ Check ☐ Charge Check # / Auth Code:

Signature of Driver Receiving Cash:

Cash Received:

Total COD Order Amount to Collect Without Standby Charges:

Comments:

CONCRETE DISPOSAL FEE
_____ PARTIAL _____ FULL LOAD _____ YARDS

WATER ADDED: _____ GAL YARDS IN DRUM: _____ WHEN ADDED

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY: _____

Notice: Our drivers will make every effort to place materials where the customer designates, but the Company assumes no responsibility for damages inside curb or property line. Customer agrees to the terms of sale and delivery and accepts concrete as is. Due to important factors which are out of our control after delivery, this Company will not accept any responsibility for the finished results. No credit for returned concrete. Buyers exceptions and claims shall be deemed waived unless made to us in writing within one business day after the receipt of materials.

SPECIAL TERMS: Any water added is at customers own risk. If water is added on job, concrete strength is no longer guaranteed. **WARNING:** Product may cause skin and/or eye irritation. **CAUTION:** Material may be hazardous to your safety and health. Please refer to the backside of this ticket for important safety handling information, and to the material safety data sheets for additional information.

AUTHORIZED SIGNATURE:

Ⓧ

UNIVERSAL PREV TRK: **INVOICE** LOAD NUM: 1

Road & Parking Lot
South of Tunnel

CEMEX

53997801

Plant:	Begin Loading:	To Job:	Arrive Job:	Start Unload:	Finish Unload:	Leave Job:	Return Plant:
112411E	12:02	12:12					

Customer Code: BASH1111 Customer Name: 4412-FLORIDA ENVIRONMENTAL COMPLIANC

Customer Job Number:

Order Code / Date: E94n 05/17/17

Project Code: Project Name:

Project P.O. Number:

Order P.O. Number: NO PO

Ticket Date: 05/17/17 Delivery Address: KSC LC 39B, KENNEDY SPACE CENTER

Map Page: Map/Row/Column:

Delivery Instructions: SAFETY COUNTS-4" SLUMP ON JOB

Dispatcher: rdtwade11

Ticket Number: 35060549

Due On Job:	Slump:	Truck Number:	Driver Number:	Driver Name:	End Use:
12:30	4.00	10024512	15106169	ANTHONY FUSCO	BLDNG: SLAB

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
7.00	7.00	7.00	1568703	4000 RELY-FIBRIL FIBRIL_FIB	YDS	124.00	868.00
1.00	1.00	1.00	1571252	SERV,PAYLOAD,CHARGE OVER 8	PC	200.00	200.00
1.00	1.00	1.00	1247818	FUEL SURCHARGE	PC	13.50	13.50
1.00			1202749	ENVIRONMENTAL CHARGE		20.00	20.00
				SALES TAX:			77.11
				TOTAL AMOUNT FOR THIS TICKET NOT INCLUDING STANDBY CHARGES:			1178.61

Cash / Check / Charge	Check # / Auth Code:	Signature of Driver Receiving Cash:	Cash Received:	Total COD Order Amount to Collect Without Standby Charges:
☐ Cash ☐ Check ☐ Charge				1178.61

Comments:

CONCRETE DISPOSAL FEE

_____ PARTIAL _____ FULL LOAD _____ YARDS

WATER ADDED: _____ GAL YARDS IN DRUM: _____ WHEN ADDED.

_____ SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

_____ SIGNATURE

☐ LOAD WAS TESTED BY: _____

Notice: Our drivers will make every effort to place materials where the customer designates, but the Company assumes no responsibility for damages inside curb or property line. Customer agrees to the terms of sale and delivery and accepts concrete as is. Due to important factors which are out of our control after delivery, this Company will not accept any responsibility for the finished results. No credit for returned concrete. Buyers exceptions and claims shall be deemed waived unless made to us in writing within one business day after the receipt of materials.

SPECIAL TERMS: Any water added is at customers own risk. If water is added on job, concrete strengt is no longer guaranteed. **WARNING:** Product may cause skin and/or eye irritation. **CAUTION:** Materi may be hazardous to your safety and health. Please refer to the backside of this ticket for importa safety handling information, and to the material safety data sheets for additional information.

AUTHORIZED SIGNATURE:

Ⓧ

68UNIVERSAL PREV TRK: LOAD NUM: 1

CUSTOMER

CEMEX

Z2 mini Cold Pads

53998132

Z U

Q - 3 x 3 x .5" mini Cold Pads

11/1112		2:39	3:21	3:38	4:25		

Customer Code: 3012169 Customer Name: FLORIDA ENVMTL COMPLIANCE CORP

Customer Job Number: Order Date / Mode: 1135 05/23/17

Project Code: 4109364 Project Name: LC - 398 - KSC

Project PO Number: pending Order Taken By: FOGER

Ticket Date: 05/23/17 Delivery Address: LC - 398 - KSC

Delivery Instructions: SR 3 NORTH WEST 528A PKWY, RIGHT ON SATURN TOWARDS END FOLLOW SIGNS HYDRITE

Load Number: 35U171737

Due On Job	Slump	Truck Number	Driver Number	Driver Name	Est Use
15:00	4.00	100543563	000191004	TOMMY IVEY	BLDNGS SLAB

LOAD QUANTITY	CUMULATIVE QUANTITY	ORDERED QUANTITY	MATERIAL CODE	PRODUCTION DESCRIPTION	UOM	UNIT PRICE	AMOUNT
4.00	4.00	4.00	1538553	4000 PROCK/FIBER FIBRIL-F YD3X			
1.00			2478616	FUEL SURCHARGE			
1.00			2180742	ENVIRONMENTAL CHARGE			
1.00			1538552	SERV,PAYLOAD,CHARGE OVER 3			

☐ Cash ☐ Check ☐ Charge — Check # / Auth Code:

Signature of Driver Receiving Cash:

Cash Received:

Total COD Order Amount to Collect Without Penalty Charges:

Comments:

CONCRETE DISPOSAL FEE
_____ PARTIAL _____ FULL LOAD _____ YARDS

WATER ADDED: 2 ≤ GAL YARDS IN DRUM WHEN ADDED:

SIGNATURE

CURB LINE CROSSED AT OWNER'S/AGENT'S REQUEST:

SIGNATURE

☐ LOAD WAS TESTED BY:

Notice: Our drivers will make every effort to place materials where the customer designates, but the Company assumes no responsibility for damages inside curb or property line. Customer agrees to the terms of sale and delivery and accepts concrete as is. Due to important factors which are out of our control after delivery, this Company will not accept any responsibility for the finished results. No credit for returned concrete. Buyers acceptance and claims shall be deemed waived unless made to us in writing within one business day after the receipt of materials.

SPECIAL TERMS: Any water added is at customers own risk. If water is added on job, concrete strength is no longer guaranteed. WARNING: Product may cause skin and/or eye irritation. CAUTION: Material may be hazardous to your safety and health. Please refer to the backside of this ticket for important safety handling information, and to the material safety data sheets for additional information.

AUTHORIZED SIGNATURE:

Ⓧ

SSUNIVERSAL PREV TRK: LOAD NUM:

#57 STONE FOR AIR SPARGE COMPRESSOR SYSTEM PAD CONSTRUCTION

LOAD TICKETS

* SPARGE TRAILER PAD COUST MATERIAL

Weighed At: City Point Terminal

1026150351

CEMEX FDOT # TM-447/87-090 COCOA, FL 32926

FDOT # TM-447/87-090
Location: 1331

Order: 41110958 **Dispatch:** **Date:** 06/01/2017
Ship To: 50073013 - FLORIDA ENVMTL-1331,GENERIC FOB AGG:P,13
AGG:P,1331,COMPLEX 39-B
CAPE CANAVERAL
COCOA, FL 32926
Instruct: AGG:P,1331,COMPLEX 39-B
FECC#14006

Job #: **PO:** F0064
Product: 1036898 - ASTM #57 CERT FOR FDOT CODE 10
Carrier: -
Vehicle: 2297253 - 1331-24,CITY POINT PLANT TRUCK
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 6.50 ton

Weighmaster:
CEMEX

Deputy Weighmaster:
Connor J Williams

Scale: 3
In: 11:25 am
Out: 11:34 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	49,740	24.87	22.56
Tare:	36,740	18.37	16.66
Net:	13,000	6.50	5.90

Today Loads: 1
Today Qty: 6.50 ton
0.00

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

BACKFILL

LOAD TICKETS

DS TRANSPORTATION & BOBCAT SERVICE, INC.
Sanford, Florida
Phone: 407-832-8710
Fax: 407-549-7330

20730

Date 6-20-21 Truck # 979 Row

Job Name FECC - NASA KSC

Hauling Co. DS

Signature

Start Time	Stop Time

☐FILL ☐SAND ☐CLAY ☐OTHER

PIT LOCATION B & B - 31710

#095773	18cu Fill
#095774	18cu Fill
#095775	18cu Fill

TERMS: 10 Days of Invoice date
A monthly FINANCE CHARGE OF 1½% will be imposed on all past due accounts. This is an ANNUAL PERCENTAGE RATE OF 18%. If collection is made by suit or otherwise, customer agrees to pay interest until paid, also collection costs including a reasonable attorney's fees.
WE WILL ASSUME NO RESPONSIBILITY FOR DAMAGES WHERE DELIVERY IS MADE INSIDE CURB.

Thank You!

WHITE - DS YELLOW - CUSTOMER PINK - PIT GOLD - TRUCK

BISHOP & BUTTREY INCORPORATED

DELIVERY TICKET 095775

DATE: 6-20-17 TIME: 1231

CUSTOMER: FECC

PIT: 164 F00164

PROJECT: NASA Cape Canv

TRUCKER: DS

TRUCK NO.: B&B - 979

MATERIAL	QUANTITY
☑ EMBANKMENT FILL	☐ 16 CUBIC YARDS
☐ SELECT FILL	☑ 18 CUBIC YARDS
☐ TOP SOIL	☐ 20 CUBIC YARDS
☐ CLAY	☐ OTHER:
☐ WASHED SAND	
☐ OTHER:	

BY: SIGNATURE

CUSTOMER'S COPY: WHITE - TRUCKER'S COPY: YELLOW - B & B COPY: PINK
REORDER VIA SIR SPEEDY LEE ROAD • 407-647-3328

BISHOP & BUTTREY INCORPORATED

DELIVERY TICKET 095773

DATE: 6-20-17 TIME: 710

CUSTOMER: FECC

PIT: 164

PROJECT: NASA

TRUCKER: DS

TRUCK NO.: B&B - 979

MATERIAL	QUANTITY
☑ EMBANKMENT FILL	☐ 16 CUBIC YARDS
☐ SELECT FILL	☑ 18 CUBIC YARDS
☐ TOP SOIL	☐ 20 CUBIC YARDS
☐ CLAY	☐ OTHER:
☐ WASHED SAND	
☑ OTHER:	

BY: SIGNATURE

CUSTOMER'S COPY: WHITE - TRUCKER'S COPY: YELLOW - B & B COPY: PINK

BISHOP & BUTTREY INCORPORATED

DELIVERY TICKET 095774

DATE: 6-20-17 TIME:

CUSTOMER: FECC

PIT: 164

PROJECT: NASA / Cape Canaveral

TRUCKER: DS

TRUCK NO.: B&B - 979

MATERIAL	QUANTITY
☑ EMBANKMENT FILL	☐ 16 CUBIC YARDS
☐ SELECT FILL	☑ 18 CUBIC YARDS
☐ TOP SOIL	☐ 20 CUBIC YARDS
☐ CLAY	☐ OTHER:
☐ WASHED SAND	
☐ OTHER:	

BY: SIGNATURE

CUSTOMER'S COPY: WHITE - TRUCKER'S COPY: YELLOW - B & B COPY: PINK

DS TRANSPORTATION & BOBCAT SERVICE, INC.
Sanford, Florida
Phone: 407-832-8710
Fax: 407-549-7330

20731

Date 6-21-17 Truck # 979 - FOR

Job Name FECC - NASA - KSC

Hauling Co. DS

Signature

Start Time	Stop Time

☒FILL ☐SAND ☐CLAY ☐OTHER

PIT LOCATION B&B - BITHLO

#095776	Bithlo Fill
#095781	Load Fill
#095782	Load Fill

TERMS: 10 Days of Invoice date.
A monthly FINANCE CHARGE OF 1½% will be imposed on all past due accounts. This is an ANNUAL PERCENTAGE RATE OF 18%. If collection is made by suit or otherwise, customer agrees to pay interest until paid, also collection costs including a reasonable attorney's fees.
WE WILL ASSUME NO RESPONSIBILITY FOR DAMAGES WHERE DELIVERY IS MADE INSIDE CURB.

Thank You!

WHITE - DS YELLOW - CUSTOMER PINK - PIT GOLD - TRUCK

BISHOP & BUTTREY INCORPORATED

DELIVERY TICKET 095781

DATE: 6-21-17 TIME: 944

CUSTOMER: FECC

PIT: 164

PROJECT: #F0064 Nasa/Cape Canaveral

TRUCKER: DS

TRUCK NO.: B&B - 979

MATERIAL	QUANTITY
☑ EMBANKMENT FILL	☐ 16 CUBIC YARDS
☐ SELECT FILL	☑ 18 CUBIC YARDS
☐ TOP SOIL	☐ 20 CUBIC YARDS
☐ CLAY	☐ OTHER:
☐ WASHED SAND	
☐ OTHER:	

BY: SIGNATURE

CUSTOMER'S COPY: WHITE - TRUCKER'S COPY: YELLOW - B & B COPY: PINK
REORDER VIA SIR SPEEDY LEE ROAD • 407-647-3328

BISHOP & BUTTREY INCORPORATED

DELIVERY TICKET 095776

DATE: 6-28-17 TIME: 700

CUSTOMER: FECC

PIT: 164 project # F0064

PROJECT: NASA Cape Canaveral

TRUCKER: DS

TRUCK NO.: B&B - 979

MATERIAL	QUANTITY
☑ EMBANKMENT FILL	☐ 16 CUBIC YARDS
☐ SELECT FILL	☑ 18 CUBIC YARDS
☐ TOP SOIL	☐ 20 CUBIC YARDS
☐ CLAY	☐ OTHER:
☐ WASHED SAND	
☐ OTHER:	

PY: SIGNATURE

BISHOP & BUTTREY INCORPORATED

DELIVERY TICKET 095782

DATE: 6-21-17 TIME: 1150

CUSTOMER: FECC

PIT: 164

PROJECT: # F0064 Nasa/Cape Canaveral

TRUCKER: DS

TRUCK NO.: B&B - 979

MATERIAL	QUANTITY
☑ EMBANKMENT FILL	☐ 16 CUBIC YARDS
☐ SELECT FILL	☑ 18 CUBIC YARDS
☐ TOP SOIL	☐ 20 CUBIC YARDS
☐ CLAY	☐ OTHER:
☐ WASHED SAND	
☐ OTHER:	

BY: SIGNATURE

DS TRANSPORTATION & BOBCAT SERVICE, INC.
Sanford, Florida
Phone: 407-832-8710
Fax: 407-548-7330

20736

Date 6-27-17 Truck # 979 Ford

Job Name FECC - K.S.C.

Hauling Co. DS

Signature

Start Time	Stop Time

☐FILL ☐SAND ☐CLAY ☐OTHER

PIT LOCATION B513 - B17 to C

1 LOAD FILL	#095854
1 LOAD FILL	#095855

TERMS: 10 Days of Invoice date.
A monthly FINANCE CHARGE OF 1½% will be imposed on all past due accounts. This is an ANNUAL PERCENTAGE RATE OF 18%. If collection is made by suit or otherwise, customer agrees to pay interest until paid, also collection costs including a reasonable attorney's fees.
WE WILL ASSUME NO RESPONSIBILITY FOR DAMAGES WHERE DELIVERY IS MADE INSIDE CURB.

Thank You!

WHITE - DS YELLOW - CUSTOMER PINK - PIT GOLD - TRUCK

BISHOP & BUTTREY INCORPORATED

DELIVERY TICKET 095854

DATE: 6-27-17 TIME: 705

CUSTOMER: FECC

PIT: 164

PROJECT: KSC

TRUCKER: DS

TRUCK NO.: B&B - 979

MATERIAL	QUANTITY
☑ EMBANKMENT FILL	☐ 16 CUBIC YARDS
☐ SELECT FILL	☑ 18 CUBIC YARDS
☐ TOP SOIL	☐ 20 CUBIC YARDS
☐ CLAY	☐ OTHER:
☐ WASHED SAND	
☐ OTHER:	

BY: Ron S.
SIGNATURE

CUSTOMER'S COPY: WHITE - TRUCKER'S COPY: YELLOW - B & B COPY: PINK
REORDER VIA SIR SPEEDY LEE ROAD • 407-647-3328

BISHOP & BUTTREY INCORPORATED

DELIVERY TICKET 095855

DATE: 6-27-17 TIME: 937

CUSTOMER: FECC

PIT: 164

PROJECT: KSC

TRUCKER: DS

TRUCK NO.: B&B - 979

MATERIAL	QUANTITY
☑ EMBANKMENT FILL	☐ 16 CUBIC YARDS
☐ SELECT FILL	☑ 18 CUBIC YARDS
☐ TOP SOIL	☐ 20 CUBIC YARDS
☐ CLAY	☐ OTHER:
☐ WASHED SAND	
☐ OTHER:	

BY: RMS
SIGNATURE

LIMEROCK BASE FOR ROADWAY RECONSTRUCTION

LOAD TICKETS

1812



J.A. GARRIDO, INC.

P.O. BOX 411273
MELBOURNE, FLORIDA 32941

PHONE: (321) 403-3352 FAX: (321) 254-2889

DATE: 1-26-2017 TRUCK # 767

CUSTOMER: FECC

HAULED FROM: [illegible] HAULED TO: [illegible]

START 7:00 [illegible] STOP

MATERIAL: [illegible]

TICKET #	TONS	#	TICKET #	TONS
102611931	19.09	21		
		22		
		23		
		24		
		25		
		26		
		27		
		28		
		29		
		30		
		31		
		32		
		33		
		34		
		35		
		36		
		37		
		38		
		39		
		40		

OPERATOR / DRIVER J.A. GARRIDO, INC.



Weighed At: City Point Terminal

1026119319

CEMEX FDOT # TM-447/87-090
COCOA, FL 32926

FDOT # TM-447/87-090
Location: 1331

Order: 41094836 **Dispatch:** **Date:** 01/26/2017
Ship To: 50073013 - FLORIDA ENVMTL-1331,GENERIC FOB AGG:P,13
AGG:P,1331,LAUNCH COMPLEX
CAPE CANAVERAL
COCOA, FL 32926
Instruct: AGG:P,1331,LAUNCH COMPLEX 39B

Job #: **PO:** BP-F0064
Product: 1037371 - LIMEROCK BASE CERT FOR FDOT CODE 01
Carrier: -
Vehicle: 2106187 - 1055-767,J A GARRIDO
Tractor / Trailer1 / Trailer 2 -/- -/-

Qty: 18.79 ton
Weighmaster:
CEMEX
Deputy Weighmaster:
Eric R Hadley
Scale: 2
In: 7:33 am
Out: 7:50 am

— DRIVER ON AT TARE & GROSS —

	lb	ton	tne
Gross:	68,240	34.12	30.95
Tare:	30,660	15.33	13.91
Net:	37,580	18.79	17.05

Today Loads: 1
Today Qty: 18.79 ton
0.00

CEMEX'S STANDARD TERMS AND CONDITIONS INCORPORATED HEREIN.

0.00

Signature of Receiving Agent Driver:

METRIC CONVERSION FORMULA: POUNDS DIVIDED BY 2204.623, ROUNDED TO 2 DECIMALS
SEE REVERSE SIDE FOR PRODUCT LABEL INFORMATION

APPENDIX L
AIR COMPRESSOR SYSTEM CHECKOUT
(FURNISHED ON CD)

OFF-SITE COMMISSIONING

AIR COMPRESSOR SYSTEM CHECKOUT

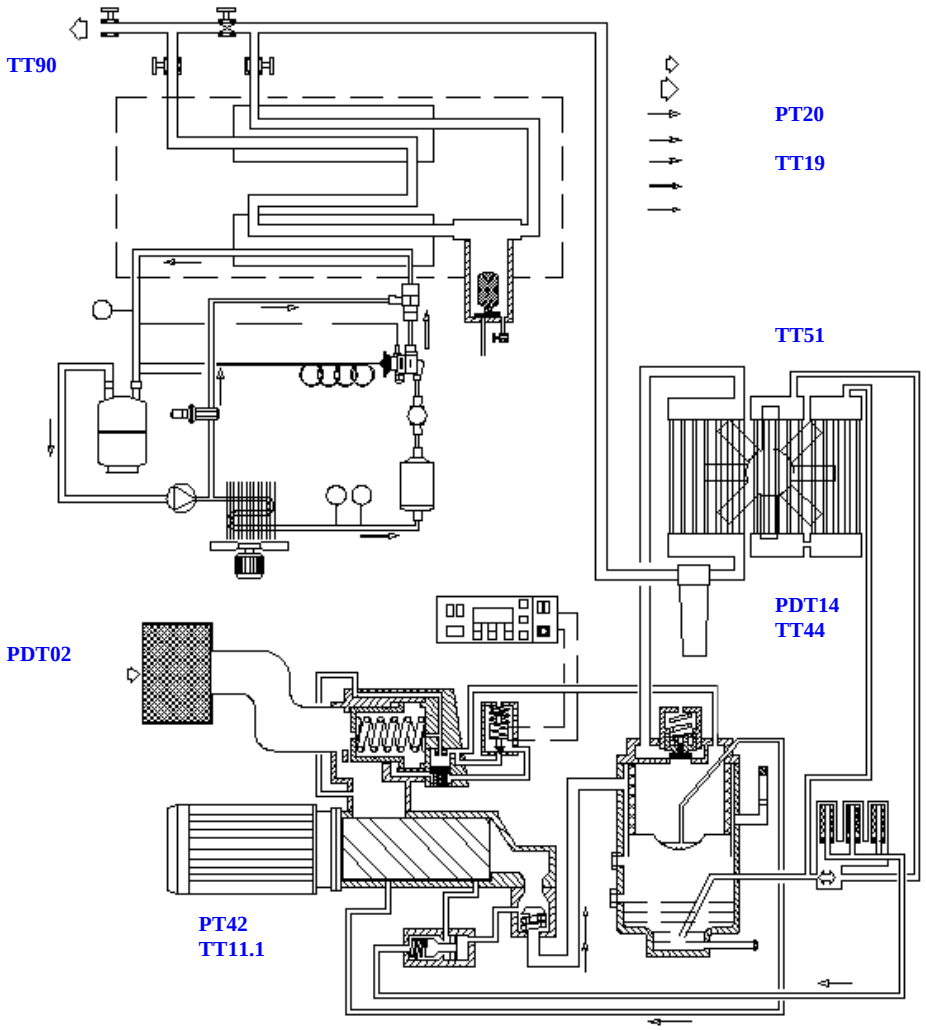
Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B 29927 HARDEEVILLE	*Report date:*	05/09/2017 10:39:55 AM

Commissioning procedure –GA 75VSD-175 AFF 46

The commissioning of a compressor is of special significance. Correct commissioning is the first step in building up the equipment history. The equipment history is essential for proper follow-up.

During commissioning the service engineer will record the initial service readings and other operating data of the equipment. All temperatures, pressures, voltage, amps, etc. need to be properly recorded, using the correct service instruments and gauges.

The service data in the commissioning report will provide an important source of reference at a later stage. You will refer to them when handling e.g. when discussing any service problem. If the service readings have not recorded during commissioning, then comparison at a later stage may become considerably more difficult.



Outlet temperature element 1 (TT 11.1)	168 °F	(PDT 02)	PSI
(TT 19)	°F	(PDT 14)	PSI
(TT 44)	°F	Working pressure (PT 20)	100 PSI
(TT 51)	°F	(PT 42)	PSI
LAT (TT 90)	36 °F		

Atlas Copco Compressor Compressors LLC A Company Within the Atlas Copco Group
East Region Customer Service Center E-mail: Eastern.Region@us.atlascopco.com Phone: 800.433.2960
260 Corporate Drive Fax: 800.603.0001
Reading, PA 19605
USA www.atlascopco.us

Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B	*Report date:*	05/09/2017 10:39:55 AM
29927 HARDEEVILLE		

Equipment

Equipment:	GA 75VSD-175 AFF 46			*Running Hours:*	1	*hours*
Serial Number:	API671042	*Visit date:*	05/08/2017	*Load Hours:*		*hours*
Contract Number:		*Order Number:*	194324	*Accumulated Volume:*	0	*1000 m³*

Measurement Points

Counter	Current Value	Unit	Date
Running hours	1	H	5/9/2017
Accumulated volume	0	m3 x (1000)	5/9/2017
Motor start	6	#	5/9/2017
VSD 1-20% RPM	20	%	5/9/2017
VSD 20-40% RPM	2	%	5/9/2017
VSD 40-60% RPM	1	%	5/9/2017
VSD 60-80% RPM	1	%	5/9/2017
VSD 80-100% RPM	75	%	5/9/2017
Working pressure	100	PSI	5/9/2017
Ambient temperature	72	°F	5/9/2017
Converter cabinet temperature	95	°F	5/9/2017
Outlet temperature element 1	168	°F	5/9/2017
Pressure dewpoint	36	°F	5/9/2017
LAT	36	°F	5/9/2017
SPM Motor NDE	20=20/26@600	dB	5/9/2017
SPM Element - P1	25=3/10@600	dB	5/9/2017
SPM Element - P2	25=4/13@600	dB	5/9/2017
SPM Gearbox	25=19/25@600	dB	5/9/2017
Motor Current U1	130	A	5/9/2017
Motor Current V1	130	A	5/9/2017
Motor Current W1	130	A	5/9/2017
Voltage L1-L2	460	V	5/9/2017
Voltage L1-L3	460	V	5/9/2017
Voltage L2-L3	461	V	5/9/2017

Commissioning check list

Check	
Environmental condition	Clean
Installation carried out by	Customer
Electrical connection carried out by	Customer
Compressor room properly ventilated	No
Any other compressors in the same room	No
Inlet and/or outlet ducting used	-
Voltage	460 V
Frequency	60 Hz
LP element serial number	AIA2151300
HP element serial number	-
Instruction in Elektronikon to customer	Yes
Drain water goes to	Oil/water filter
Cool water flow	l/s
Motor data	See WO
Motor Serial Number	See WO
Equipment install indoor / outdoor	indoor
Any damages on the equipment	No
Any corrosion found on the equipment	No
Main motor overload setting	A
Fan motor overload setting	5.1 A
Fan motor 2 overload setting	A
Fan motor 3 overload setting	A
Air receiver installed	Yes

Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B	*Report date:*	05/09/2017 10:39:55 AM
29927 HARDEEVILLE		

Commissioning check list

Check	
Filter(s) installed behind compressor	Yes
Load / Unload pressure	100 Bar
Dryer installed	Build-in
Air intake quality OK	Yes
Air header OK	Yes

Operations List

Operations
Give machine description
Record machine serial number
Record elements part nr & serial nr
Record all machine options
Record motors part nr & serial nr
Record cubicle part nr & serial nr
Check machine condition after transport
Remove transport locking bolts
Check all electrical wiring
Check torque main motor cables (cubicle)
Check main motor overload setting
Check fan motor(s) overload setting
Check connection of transfo
Check machine environment
Check condensate drains
Check filters behind compressors
Record filter type(s)
Record all required compressor data
Record all required dryer data
Record all required motor data
Switch on voltage/push reset
Check if LED's & displays light up
Check main motor rotation sense
Check fan motor rotation sense (OC)
Check fan motor rotation sense (AC)
Check for oil/air leaks
Check the drive shaft seal
Fill element (1 lit) with oil (unloader)
Check fan motor rotation sense ID dryer
Record all data and settings
Check SPM readings
Record load pressure
Record unload pressure
Record all protection settings (w + sd)

Work Comments

Problem: Need to perform start up of new unit and help customer with remote function.
Cause: New install.
Action: Went through start up procedure and set up remote function and ARAVF on Mk5 controller.
Job Description: Removed shipping bolts and went through start up procedures. Activated remote control function and ARAVF on the mk5 controller. Test ran unit and took readings. Gave Shawn instruction on how to operate the unit/controller. Unit is operating properly at this time. JM/JW NOTE: Customer was not ready to tie in to test the remote function. Verified with customer where to terminate his wires for remote control of our unit. Also could not run unit at high rpm because we were not able to dump enough air.JM
0221134
VESSEL OIL CE/ASME
1625593199
025017024021
NEOS INVERTER 130KVA
1900535002

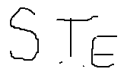
Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B	*Report date:*	05/09/2017 10:39:55 AM
29927 HARDEEVILLE		

Work Comments

16100340-217
COOLER OIL
1625564533
1666705
DRYER RAIL UL-CUL
1900266101
17023839581
LD202 ASSY 115V
1627151383
17023839587
LD202 ASSY 115V
1627151383
1965250400039
SAFETY VALVE
1613781000
201700413
CUBICLE GA55-90VSD
1900266002
3G1P170401771
MOTOR GA75VSD 380/50 - 460/60
1625202501
8000HRS
FILTER OIL
1625752600
AIA2151300
C146 OIS M-05
1616714683
AIR1815
CD-ROM GA55-90
2929012007
AIR1848
LOOSE PARTS SET
1625891618
B170156
FAN 220-230/380-440-460V
1625594971
B59865808
LABEL TYPE 1
1622730500
BH6430070301101
MODEM KIT MK5 ETH AND 24V PSU
1630070782
ITJ012378
ID255 460V 60HZ 3PH
1624960181
M602011701
NANOPERMRING
1625749200
RN1703A00590
GRAPHIC
1900520013
WO16100343-044
COOLER AFTER GA75+-75VSD
1625594404

Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B 29927 HARDEEVILLE	*Report date:*	05/09/2017 10:39:55 AM

Customer Confirmation



Signed by Shawn Evans 843 296 4580 at 05/09/2017 10:46:11 AM

Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B	*Report date:*	05/09/2017 03:06:44 PM
29927 HARDEEVILLE		

Equipment

Equipment:	GA 75VSD-175 AFF 46			*Running Hours:*	1	*hours*
Serial Number:	API671042			*Load Hours:*		*hours*
Visit date:	05/08/2017	*Order Number:*	194324	*Accumulated Volume:*	0	*1000 m³*
Contract Number:		*PO number:*	COGS			

Work Comments

Problem: Need to perform start up of new unit and help customer with remote function.
Cause: New install.
Action: Went through start up procedure and set up remote function and ARAVF on Mk5 controller.
Job Description: Removed shipping bolts and went through start up procedures. Activated remote control function and ARAVF on the mk5 controller. Test ran unit and took readings. Gave Shawn instruction on how to operate the unit/controller. Unit is operating properly at this time. JM/JW NOTE: Customer was not ready to tie in to test the remote function. Verified with customer where to terminate his wires for remote control of our unit. Also could not run unit at high rpm because we were not able to dump enough air.JM
0221134
VESSEL OIL CE/ASME
1625593199
025017024021
NEOS INVERTER 130KVA
1900535002
16100340-217
COOLER OIL
1625564533
1666705
DRYER RAIL UL-CUL
1900266101
17023839581
LD202 ASSY 115V
1627151383
17023839587
LD202 ASSY 115V
1627151383
1965250400039
SAFETY VALVE
1613781000
201700413
CUBICLE GA55-90VSD
1900266002
3G1P170401771
MOTOR GA75VSD 380/50 - 460/60
1625202501
8000HRS
FILTER OIL
1625752600
AIA2151300
C146 OIS M-05
1616714683
AIR1815
CD-ROM GA55-90
2929012007
AIR1848
LOOSE PARTS SET
1625891618
B170156
FAN 220-230/380-440-460V
1625594971

Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B	*Report date:*	05/09/2017 03:06:44 PM
29927 HARDEEVILLE		

Work Comments

B59865808
LABEL TYPE 1
1622730500
BH6430070301101
MODEM KIT MK5 ETH AND 24V PSU
1630070782
ITJ012378
ID255 460V 60HZ 3PH
1624960181
M602011701
NANOPERMRING
1625749200
RN1703A00590
GRAPHIC
1900520013
WO16100343-044
COOLER AFTER GA75+-75VSD
1625594404

Recommended Repair

Estimated work hour:

Time Confirmation

Date	Service Engineer
05/08/2017	Jeffery McCrary
05/08/2017	Jeffery McCrary
05/08/2017	Jeffery McCrary
05/08/2017	Justin Warner
05/08/2017	Justin Warner
05/08/2017	Justin Warner
05/09/2017	Jeffery McCrary
05/09/2017	Jeffery McCrary
05/09/2017	Justin Warner
05/09/2017	Justin Warner

Material Confirmation

Part Number	Part Description	Quantity unit

Work Done

	Operations	Comments
☑	Give machine description	-
☑	Record machine serial number	-
☑	Record elements part nr & serial nr	-
☑	Record all machine options	-
☑	Record motors part nr & serial nr	-
☑	Record cubicle part nr & serial nr	-
☑	Check machine condition after transport	-
☑	Remove transport locking bolts	-
☑	Check all electrical wiring	-
☑	Check torque main motor cables (cubicle)	-
☑	Check main motor overload setting	-
☑	Check fan motor(s) overload setting	-
☑	Check connection of transfo	-
☑	Check machine environment	-
☑	Check condensate drains	-

Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B	*Report date:*	05/09/2017 03:06:44 PM
29927 HARDEEVILLE		

Work Done

Operations	Comments
☑ Check filters behind compressors	-
☑ Record filter type(s)	-
☑ Record all required compressor data	-
☑ Record all required dryer data	-
☑ Record all required motor data	-
☑ Switch on voltage/push reset	-
☑ Check if LED's & displays light up	-
☑ Check main motor rotation sense	-
☑ Check fan motor rotation sense (OC)	-
☑ Check fan motor rotation sense (AC)	-
☑ Check for oil/air leaks	-
☑ Check the drive shaft seal	-
☑ Fill element (1 lit) with oil (unloader)	-
☑ Check fan motor rotation sense ID dryer	-
☑ Record all data and settings	-
☑ Check SPM readings	-
☑ Record load pressure	-
☑ Record unload pressure	-
☑ Record all protection settings (w + sd)	-

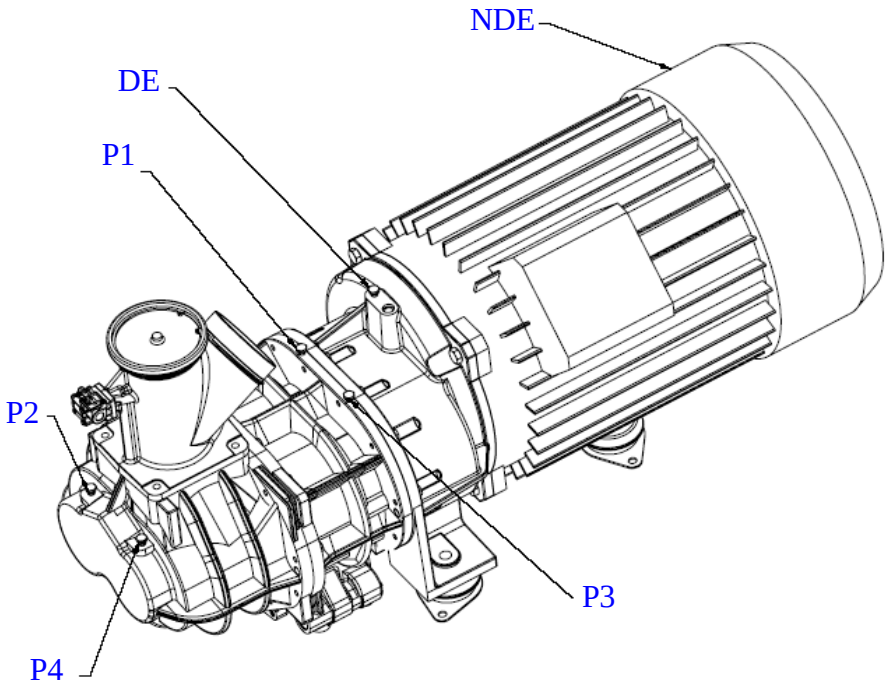
Measurement Points

Counter	Current Value	Unit	Date
Running hours	1	H	5/9/2017
Accumulated volume	0	m3 x (1000)	5/9/2017
Motor start	6	#	5/9/2017
VSD 1-20% RPM	20	%	5/9/2017
VSD 20-40% RPM	2	%	5/9/2017
VSD 40-60% RPM	1	%	5/9/2017
VSD 60-80% RPM	1	%	5/9/2017
VSD 80-100% RPM	75	%	5/9/2017
Working pressure	100	PSI	5/9/2017
Ambient temperature	72	°F	5/9/2017
Converter cabinet temperature	95	°F	5/9/2017
Outlet temperature element 1	168	°F	5/9/2017
Pressure dewpoint	36	°F	5/9/2017
LAT	36	°F	5/9/2017
SPM Motor NDE	20=20/26@600	dB	5/9/2017
SPM Element - P1	25=3/10@600	dB	5/9/2017
SPM Element - P2	25=4/13@600	dB	5/9/2017
SPM Gearbox	25=19/25@600	dB	5/9/2017
Motor Current U1	130	A	5/9/2017
Motor Current V1	130	A	5/9/2017
Motor Current W1	130	A	5/9/2017
Voltage L1-L2	460	V	5/9/2017
Voltage L1-L3	460	V	5/9/2017
Voltage L2-L3	461	V	5/9/2017

Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B	*Report date:*	05/09/2017 03:06:44 PM
29927 HARDEEVILLE		

SPM procedure –GA 75VSD-175 AFF 46 compressor, with serial number

The SPM measurement of a compressor is an event of special significance. Proper SPM measurement is the first step in building up the machine history of your GA compressor. The machine history is essential for proper follow-up.



Measurement Points

Counter	Last Value Date:	Current Value Date: 5/9/2017
SPM Element - P1		25=3/10@600
SPM Element - P2		25=4/13@600
SPM Element - P3		
SPM Element - P4		
SPM Motor DE		
SPM Motor NDE		20=20/26@600

SPM Report created by HOYJMCCRARY

Atlas Copco Compressor Compressors LLC
A Company Within the Atlas Copco Group
1800 Overview
Rock Hill
SC, 29732
USA
E-mail:
www.atlascopco.us
Phone: +1 803 817 7000
+1 866 546 3588
Fax:+1 803 817 7450

Customer Details		
MAE2	*Contact:*	Shawn Evans 843 296 4580
179-A INDUSTRIAL PARK RD		
ATTN: SHAWN EVANS / NASA 39B 29927 HARDEEVILLE	*Report date:*	05/09/2017 03:06:44 PM

Customer Confirmation



Signed by Shawn Evans 843 296 4580 at 05/09/2017 03:08:52 PM

Atlas Copco Compressor Compressors LLC
A Company Within the Atlas Copco Group
1800 Overview
Rock Hill
SC, 29732
USA
E-mail:
www.atlascopco.us
Phone: +1 803 817 7000
+1 866 546 3588
Fax:+1 803 817 7450

ON-SITE ACCEPTANCE

AIR COMPRESSOR SYSTEM CHECKOUT

Project number: ___MAE24083_____
Project name: _____LC 39B_____

Tested By: _____Jim Frydl_____
Company: _____MAE2_____
Date Tested: _____6/26-6/30_____

Minimum Tools Required:

Clamp style amp meter	Socket Set
Multi meter for AC/DC Volts and ma signals	Wire Cutters
Instrumentation Screw Driver	Wire Strippers
Screw Driver Set	Channel Locks
Wrench Set	Pipe Wrenches
Straight Edge for Aligning couplings and belts	

Testing Checklist	Ck	Initial	Date
Verify site power per system design criteria	X	JF	6/26
Verify building process flow and instrumentation matches P +ID drawing, check off drawing components against actual (preferably with the customer present)	X	JF	6/26
Site voltage measured: L1/L2 473 L2/L3 474 L3/L1 473 L1/GR 274.9 L2/GRD 275.3 L3/GRD 275.2	X	JF	6/26
Check field wiring and piping as per drawings	X	JF	6/26
Check panel for lose wiring	X	JF	6/26
Tighten all terminals where wires are terminated	X	JF	6/26
Check alignment of motors	X	JF	6/26
Check to ensure all piping unions are tight	X	JF	6/26
Check voltage on AC step down transformer	X	JF	6/26
Check voltage on DC transformer	X	JF	6/26
Check I.S. barrier is grounded as per input drawing 3.6	X	JF	6/26
Check voltage + amperage + name plate info against MAE2 mechanical test record on all motors	X	JF	6/26
Manually test inputs as per input table	X	JF	6/26
Manually test control logic for each output	X	JF	6/26
Manually test all shut down alarms	X	JF	6/26
Run through complete logic and alarm sequence with customer and make allowable changes.	X	JF	6/26
Note name of individual and company with whom logic was reviewed: Rebecca Daprato	X	JF	6/26
Test that incoming power has correct phase sequence. Bump a safe 3 phase motor to test rotation.	X	JF	6/26
Check that PLC is in run mode	X	JF	6/26
Check connections of all field wiring to ensure it was completed per the electrical drawings and per the NEC.	X	JF	6/26

System Field Test Record

Testing Checklist	Ck	Initial	Date
Fill out mechanical test record on each motor and check amperage and voltage. Document amperage on the System test records in the operating manual in the Field test load section.	X	JF	6/28
Check overload settings for all motors	X	JF	6/26
Test analogue inputs	X	JF	6/26
Install louver hoods on system – FECC Installed	X	JF	6/26
Wet test all control inputs and outputs	X	JF	6/26
Wet test all shut down alarms	X	JF	6/26
Check systems for leaks (liquid and vapor)	X	JF	6/28
Test pressure relief valves	X	JF	6/26
Check flow rate on all meters	X	JF	6/27
Test Cellular signal	X	JF	6/26
Site IP : 166.251.237.160	X	JF	6/26
Test remote access	X	JF	6/26
Test operation of Alarm email program if necessary.	X	JF	6/26
Run system in full automatic	X	JF	6/28

Customer Training Record

Customer Training Checklist			
Review the operating manual with the customer explaining the various components of the manual and sources of information.	X	JF	6/26
Review the startup and shutdown procedure with operator.	X	JF	6/26
Review operation of treatment system and describe the maintenance required for each piece of equipment.	X	JF	6/26
Describe operation of panel and panel components.	X	JF	6/26
Train customer to troubleshoot alarms based on input conditions to the PLC or relays in the panel.	X	JF	6/26
Discuss the operating logic with the customer so they understand how the system is configured to work.	X	JF	6/26
	X	JF	6/26

These are recorded in the field notes. After the system has run in auto and stabilized these should be used as the baseline.

Operating Data and Records

The following table is a guideline to document the operating conditions of the system when running in automatic mode. The startup technician should document the operating conditions at all the locations in the system. This information can be used at a later date to troubleshoot problems that can arise.

Location of Record Description	**Recorded Value**
Air Vacuum readings:	
Air Pressure Readings	
Water Pressure Readings	
Water Flow Rates	
Air Flow Rates	
Operating Temperatures:	

MOTOR TEST SCHEDULE

Air Sparge Motor

Pressure __105 PSI_
Compressor output__74%____
Air Flow_437 CFM_

Voltage

L1-L2	L1-L3	L2-L3
274.9	275.3	275.2

Amp

L1	L2	L3
81.7	81.4	82.7

APPENIDX M
O&M FORMS
(FURNISHED ON CD)

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Sam Graves	Date: 07/06/2017	Time: 14:09

Maintenance & Monitoring

Item	Completed (yes/no)	Comments or Notes
System Operational on Arrival ?	yes	None
System Operational on Departure?	yes	Power reading at 1525
Alarms on Upon Arrival?	no	
Filters Checked?	yes	
Condensate Checked?	yes	
Oil Level Checked? How Full?	yes	Full
WD40 Applied to Manifold Enclosure Joints and Bolts? (Quarterly)	no	
Maintenance Needed?	no	

Run Time and Electric Reading	Hour Meter:	236.2	Electric Meter:	40672

Air Sparge Compressor Readings - By Zone

Zone 1 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 1 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	5	NM	90.2	103.9	453	95.2

Zone 1 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
103.5	56.7	365	92.6	63

Zone 2 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 2 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	5	NM	89.8	103.7	559	103.7

Zone 2 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
103.3	56.4	441	97.9	65

Zone 3 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 3 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	5	NM	90.4	104	420	94.3

Zone 3 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
103.6	58.6	338	90.9	64

Zone 4 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 4 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	NM	NM	82	104	289	105.8

Zone 4 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.0	62.5	241	91.6	63

Air Sparge Readings - By Leg

Observed Flow Rate (SCFM)	Leg Z2-L4	Leg Z2-L2	Leg Z2-L1	Leg Z2-L3	Leg Z1-L1	Leg Z1-L2	Leg Z1-L3	Leg Z1-L4
	FT-201	FT-202	FT-203	FT-204	FT-205	FT-206	FT-207	FT-208
	138	127	135	142	102	131	116	131
Pressure (psi)	PI-201	PI-202	PI-203	PI-204	PI-205	PI-206	PI-207	PI-208
	31.8	31.5	32.5	32.8	33.1	29.3	27.9	29.6
Observed Flow Rate (SCFM)	Leg Z3-L2	Leg Z3-L3	Leg Z3-L1	Leg Z4-L1	Leg Z4-L2			
	FT-209	FT-210	FT-211	FT-212	FT-213			
	141	160	125	105	203			
Pressure (psi)	PI-209	PI-210	PI-211	PI-212	PI-213			
	31	25.2	32.4	22.4	24.4			

$$Corrected\ Flow\ Rate = Observed\ Flow\ Rate * \left(\sqrt{\frac{SG * T + 460}{36 * [P + 14.7]}}\right)^{-1}$$

Groundwater Levels (ft BTOC)

MW0011 (Z1)	MW0011 (Z3)	MW0012 (Z1)	MW0012 (Z3)	MW0014 (Z3)	MW0015 (Z3)	MW0021 (Z2)	MW0022 (Z2)	MW0023 (Z2)
NM	NM	NM	NM	NM	NM	NM	NM	NM
MW0030 (Z1)	**MW0032 (Z4)**	**MW0033 (Z1)**	**MW0036 (Z4)**	**MW0037 (Z1)**	**MW0040 (Z4)**	**Note: >0 indicates water flowing from well upon well cap removal; Z# indicates Zone in operation**		
NM	NM	NM	NM	NM	NM			

Geosyntec consultants

Notes:

Manifold group temperature readings were not collected at the manifolds, instead the results were estimated in field.

Monitoring well groundwater levels not checked in all monitoring wells listed above. Significant back pressure observed in some monitoring wells (e.g. MW0012) so others were not investigated.

NM indicates not measured.

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Sam Graves | **Date: 07/06/2017** | **Time: 14:09**

Manifold Group Temperature Readings (°F)

Zone 1 (Z1):	85	Zone 2 (Z2):	85	Zone 3 (Z3):	85	Zone 4 (Z4):	85

Air Sparge System Readings

Pressure (PSI)	Flow (ACFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW001		**ASW002**		**ASW003**		**ASW004**	
26.0	2.5	27.0	3.0	28.0	3.0	27.0	3.0
	4		5		5		5
ASW005		**ASW006**		**ASW007**		**ASW008**	
28.0	3.0	28.0	3.0	28.0	2.5	30.0	3.0
	5		5		4		5
ASW009		**ASW010**		**ASW011**		**ASW012**	
25.0	2.5	26.0	2.5	26.0	3.0	27.0	3.0
	4		4		5		5
ASW013		**ASW014**		**ASW015**		**ASW016**	
27.0	2.0	30.0	2.5	29.0	2.5	25.0	2.5
	3		4		4		4
ASW017		**ASW018**		**ASW019**		**ASW020**	
25.0	2.5	27.0	2.5	27.0	2.5	28.0	2.5
	4		4		4		4
ASW021		**ASW022**		**ASW023**		**ASW024**	
25.0	2.5	27.0	2.0	27.0	3.0	27.0	2.5
	4		3		5		4
ASW025		**ASW026**		**ASW027**		**ASW028**	
27.0	2.5	27.0	2.5	28.0	1.5	27.0	2.5
	4		4		3		4
ASW029		**ASW030**		**ASW031**		**ASW032**	
25.0	2.5	27.0	2.5	27.0	3.0	26.0	3.0
	4		4		5		5
ASW033		**ASW034**		**ASW035**		**ASW036**	
25.0	2.5	25.0	2.5	25.0	3.0	25.0	2.5
	4		4		5		4
ASW037		**ASW038**		**ASW039**		**ASW040**	
26.0	2.5	26.0	2.5	27.0	3.0	25.0	2.0
	4		4		5		3
ASW041		**ASW042**		**ASW043**		**ASW044**	
24.0	2.5	24.0	2.5	23.0	2.5	23.0	2.5
	4		4		4		4
ASW045		**ASW046**		**ASW047**		**ASW048**	
24.0	2.5	23.0	2.5	25.0	3.0	24.0	2.5
	4		4		5		4
ASW049		**ASW050**		**ASW051**		**ASW052**	
23.0	2.5	22.0	2.5	24.0	2.5	22.0	2.5
	4		4		4		4
ASW053		**ASW054**		**ASW055**		**ASW056**	
22.0	2.5	25.0	2.5	22.0	2.5	22.0	2.5
	4		4		4		4
ASW057		**ASW058**		**ASW059**		**ASW060**	
26.0	1.5	25.0	3.0	26.0	2.5	26.0	2.5
	2		5		4		4
ASW061		**ASW062**		**ASW063**		**ASW064**	
25.0	3.0	25.0	2.5	26.0	2.0	27.5	3.0
	5		4		3		5
ASW065		**ASW066**		**ASW067**		**ASW068**	
26.0	2.5	28.0	2.5	28.5	3.0	28.0	2.5
	4		4		5		4
ASW069		**ASW070**		**ASW071**		**ASW072**	
27.5	3.0	27.5	3.0	27.5	2.5	28.0	2.5
	5		5		4		4
ASW073		**ASW074**		**ASW075**		**ASW076**	
27.5	3.0	28.0	3.0	28.5	3.0	27.0	2.5
	5		5		5		4
ASW077		**ASW078**		**ASW079**		**ASW080**	
28.0	2.5	29.0	3.0	29.0	3.0	28.0	3.0
	4		5		5		5

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Sam Graves | **Date: 07/06/2017** | **Time: 14:09**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW081		**ASW082**		**ASW083**		**ASW084**	
27.5	2.5	29.0	3.5	29.5	3.0	29.5	3.5
	4		6		5		6
ASW085		**ASW086**		**ASW087**		**ASW088**	
28.0	2.5	28.0	3.0	27.0	2.5	29.0	2.0
	4		5		4		3
ASW089		**ASW090**		**ASW091**		**ASW092**	
29.0	3.5	28.0	2.5	28.5	2.5	27.0	2.5
	6		4		4		4
ASW093		**ASW094**		**ASW095**		**ASW096**	
29.0	1.5	27.5	3.5	28.0	2.0	28.0	2.5
	3		6		3		4
ASW097		**ASW098**		**ASW099**		**ASW100**	
28.0	2.5	28.5	3.0	27.0	2.5	28.0	2.0
	4		5		4		3
ASW101		**ASW102**		**ASW103**		**ASW104**	
28.0	2.5	29.0	2.5	28.0	3.0	28.0	2.5
	4		4		5		4
ASW105		**ASW106**		**ASW107**		**ASW108**	
26.5	2.5	27.5	3.0	29.0	3.0	27.5	2.5
	4		5		5		4
ASW109		**ASW110**		**ASW111**		**ASW112**	
29.0	3.5	29.0	3.0	29.0	4.0	29.0	3.5
	6		5		7		6
ASW113		**ASW114**		**ASW115**		**ASW116**	
28.0	3.5	27.5	3.0	29.0	3.5	29.0	2.5
	6		5		6		4
ASW117		**ASW118**		**ASW119**		**ASW120**	
28.5	2.0	29.0	2.5	29.0	2.0	29.0	2.5
	3		4		3		4
ASW121		**ASW122**		**ASW123**		**ASW124**	
29.5	2.0	28.0	2.5	30.0	2.5	28.0	2.0
	3		4		4		3
ASW125		**ASW126**		**ASW127**		**ASW128**	
29.5	2.0	28.0	2.0	28.5	2.5	28.0	2.5
	3		3		4		4
ASW129		**ASW130**		**ASW131**		**ASW132**	
27.5	2.5	29.0	3.5	28.0	3.0	28.0	2.5
	4		6		5		4
ASW133		**ASW134**		**ASW135**		**ASW136**	
28.0	2.5	28.0	3.0	28.0	3.0	28.0	3.5
	4		5		5		6
ASW137		**ASW138**		**ASW139**		**ASW140**	
28.0	3.0	28.0	3.5	28.5	3.5	28.0	2.5
	5		6		6		4
ASW141		**ASW142**		**ASW143**		**ASW144**	
28.5	3.0	28.0	3.5	28.5	3.0	28.0	3.0
	5		6		5		5
ASW145		**ASW146**		**ASW147**		**ASW148**	
27.5	2.0	27.5	3.0	28.0	3.0	28.0	3.0
	3		5		5		5
ASW149		**ASW150**		**ASW151**		**ASW152**	
26.0	3.5	25.0	3.0	26.0	3.5	26.0	3.5
	6		5		6		6
ASW153		**ASW154**		**ASW155**		**ASW156**	
26.0	3.0	24.0	3.5	25.0	3.5	26.0	3.5
	5		6		6		6
ASW157		**ASW158**		**ASW159**		**ASW160**	
27.0	3.5	26.0	3.5	26.0	3.5	26.0	3.5
	6		6		6		6
ASW161		**ASW162**		**ASW163**		**ASW164**	
27.0	3.0	25.0	3.5	26.0	3.0	27.0	3.0
	5		6		5		5

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Sam Graves | **Date: 07/06/2017** | **Time: 14:09**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW165		**ASW166**		**ASW167**		**ASW168**	
28.0	3.0	28.0	3.0	27.0	3.0	28.0	3.0
	5		5		5		5
ASW169		**ASW170**		**ASW171**		**ASW172**	
29.0	2.0	27.0	2.5	26.0	2.5	26.0	3.0
	3		4		4		5
ASW173		**ASW174**		**ASW175**		**ASW176**	
28.0	3.5	28.0	3.5	28.0	3.0	27.0	3.0
	6		6		5		5
ASW177		**ASW178**		**ASW179**		**ASW180**	
29.0	2.5	28.0	2.0	24.0	2.5	27.0	3.5
	4		3		4		6
ASW181		**ASW182**		**ASW183**		**ASW184**	
26.0	3.5	26.0	3.5	27.0	3.5	26.0	3.5
	6		6		6		6
ASW185		**ASW186**		**ASW187**		**ASW188**	
28.0	3.5	27.0	3.5	27.0	3.0	26.0	3.5
	6		6		5		6
ASW189		**ASW190**		**ASW191**		**ASW192**	
26.0	3.0	26.0	3.5	27.0	3.5	26.0	3.0
	5		6		6		5
ASW193		**ASW194**		**ASW195**		**ASW196**	
27.0	3.0	26.0	3.0	25.0	2.5	26.0	3.0
	5		5		4		5
ASW197		**ASW198**		**ASW199**		**ASW200**	
27.0	3.0	26.0	2.5	27.0	3.5	25.0	2.5
	5		4		6		4
ASW201		**ASW202**		**ASW203**		**ASW204**	
26.0	3.0	17.0	2.5	23.0	2.5	22.0	2.0
	5		4		4		3
ASW205		**ASW206**		**ASW207**		**ASW208**	
23.0	2.0	23.0	2.5	23.0	2.5	23.0	2.0
	3		4		4		3
ASW209		**ASW210**		**ASW211**		**ASW212**	
24.0	1.5	22.0	2.0	22.0	1.0	22.0	2.0
	2		3		2		3
ASW213		**ASW214**		**ASW215**		**ASW216**	
213.0	3.0	23.0	1.5	23.0	2.5	23.0	2.0
	12		2		4		3
ASW217		**ASW218**		**ASW219**		**ASW220**	
23.0	1.0	23.0	1.5	24.0	2.5	23.0	1.5
	2		2		4		2
ASW221		**ASW222**		**ASW223**		**ASW224**	
22.0	3.0	23.0	2.0	23.0	2.5	22.0	3.0
	5		3		4		5
ASW225		**ASW226**		**ASW227**		**ASW228**	
23.0	2.0	24.0	3.0	24.0	1.0	22.0	3.0
	3		5		2		5
ASW229		**ASW230**		**ASW231**		**ASW232**	
23.0	2.5	23.0	3.0	23.0	3.0	22.0	2.5
	4		5		5		4
ASW233		**ASW234**		**ASW235**		**ASW236**	
23.0	3.0	11.0	3.5	14.0	3.5	11.0	3.5
	5		5		5		5
ASW237		**ASW238**		**ASW239**		**ASW240**	
12.0	3.5	13.0	3.5	20.0	3.0	20.0	3.5
	5		5		5		5
ASW241		**ASW242**		**ASW243**		**ASW244**	
15.5	3.5	14.5	3.5	15.0	3.5	15.0	3.5
	5		5		5		5

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Sam Graves | **Date: 07/06/2017** | **Time: 14:09**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)						
		MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW245		**ASW246**		**ASW247**		**ASW248**	
15.0	3.5	14.0	3.5	19.5	3.0	20.0	3.0
	5		5		5		5
ASW249		**ASW250**		**ASW251**		**ASW252**	
20.5	3.5	20.5	3.0	20.5	3.0	20.0	3.5
	5		5		5		5
ASW253		**ASW254**		**ASW255**		**ASW256**	
22.0	3.0	21.5	3.5	21.5	3.0	21.0	3.5
	5		5		5		5
ASW257		**ASW258**		**ASW259**		**ASW260**	
21.0	2.5	21.5	2.0	21.5	3.5	21.0	3.0
	4		3		5		5
ASW261		**ASW262**		**ASW263**		**ASW264**	
21.0	3.5	21.0	3.0	21.0	3.0	21.5	1.5
	5		5		5		2
ASW265		**ASW266**		**ASW267**		**ASW268**	
22.0	3.0	21.5	2.5	21.0	2.5	21.0	2.0
	5		4		4		3
ASW269		**ASW270**		**ASW271**		**ASW272**	
21.0	3.5	20.5	3.0	21.0	3.0	20.0	3.5
	5		5		5		5
ASW273		**ASW274**		**ASW275**		**ASW276**	
22.0	3.0	20.0	3.5	21.5	3.0	20.0	3.0
	5		5		5		5
ASW277		**ASW278**		**ASW279**			
21.5	2.5	19.0	3.5	21.0	3.5		
	4		5		5		

Technician Signature:

Reviewer Signature:

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Dave Sizemore	Date: 07/13/2017	Time: 11:43

Maintenance & Monitoring

Item	Completed (yes/no)	Comments or Notes
System Operational on Arrival ?	yes	Electric meter reading at 10:45
System Operational on Departure?	yes	None
Alarms on Upon Arrival?	no	
Filters Checked?	yes	
Condensate Checked?	yes	
Oil Level Checked? How Full?	yes	3/4
WD40 Applied to Manifold Enclosure Joints and Bolts? (Quarterly)	no	
Maintenance Needed?	no	

Run Time and Electric Reading	Hour Meter:	380.5	Electric Meter:	72951

Air Sparge Compressor Readings - By Zone

Zone 1 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 1 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	NM	NM	89.3	104	370	110

Zone 1 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.0	48	320	93.2	71

Zone 2 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 2 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	NM	NM	88.5	103.7	379	95.6

Zone 2 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.0	50	329	90.7	82

Zone 3 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 3 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	NM	NM	88.7	103.7	328	93.5

Zone 3 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.0	51.1	300	86.9	97

Zone 4 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 4 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	NM	NM	87.6	104	333	98.9

Zone 4 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.0	49.8	290	91.3	83

Air Sparge Readings - By Leg

Observed Flow Rate (SCFM)	Leg Z2-L4 FT-201	Leg Z2-L2 FT-202	Leg Z2-L1 FT-203	Leg Z2-L3 FT-204	Leg Z1-L1 FT-205	Leg Z1-L2 FT-206	Leg Z1-L3 FT-207	Leg Z1-L4 FT-208
	109	112	105	99	119	111	93	108
Pressure (psi)	PI-201	PI-202	PI-203	PI-204	PI-205	PI-206	PI-207	PI-208
	30	30	30	30	30	30	29	29

Observed Flow Rate (SCFM)	Leg Z3-L2 FT-209	Leg Z3-L3 FT-210	Leg Z3-L1 FT-211	Leg Z4-L1 FT-212	Leg Z4-L2 FT-213
	106	126	120	129	140
Pressure (psi)	PI-209	PI-210	PI-211	PI-212	PI-213
	31	40	29	20	20

$$Corrected\ Flow\ Rate = Observed\ Flow\ Rate * \left(\sqrt{\frac{SG * T + 460}{36 * [P + 14.7]}}\right)^{-1}$$

Groundwater Levels (ft BTOC)

MW0011 (Z1)	MW0011 (Z3)	MW0012 (Z1)	MW0012 (Z3)	MW0014 (Z3)	MW0015 (Z3)	MW0021 (Z2)	MW0022 (Z2)	MW0023 (Z2)
NM	NM	0	0	0	0.00	0.00	NM	0
MW0030 (Z1)	**MW0032 (Z4)**	**MW0033 (Z1)**	**MW0036 (Z4)**	**MW0037 (Z1)**	**MW0040 (Z4)**	**Note: >0 indicates water flowing from well upon well cap removal; Z# indicates Zone in operation**		
0	NM	0	0	0	0			

Notes:

NM indicates not measured.

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Dave Sizemore	Date: 07/13/2017	Time: 11:43

Manifold Group Temperature Readings (°F)

Zone 1 (Z1):	92.3	Zone 2 (Z2):	90	Zone 3 (Z3):	75.4	Zone 4 (Z4):	90.9

Air Sparge System Readings

Pressure (PSI)	Flow (ACFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW001		**ASW002**		**ASW003**		**ASW004**	
25.0	2.5	26.0	2.5	27.0	2.5	26.0	2.5
	4		4		4		4
ASW005		**ASW006**		**ASW007**		**ASW008**	
27.0	2.5	27.0	2.5	27.0	3.0	28.0	3.0
	4		4		5		5
ASW009		**ASW010**		**ASW011**		**ASW012**	
25.0	3.0	25.0	2.0	25.0	2.5	26.0	2.5
	5		3		4		4
ASW013		**ASW014**		**ASW015**		**ASW016**	
26.0	2.0	28.0	3.0	27.0	2.5	25.0	2.5
	3		5		4		4
ASW017		**ASW018**		**ASW019**		**ASW020**	
25.0	2.0	26.0	2.5	27.0	2.0	28.0	2.0
	3		4		3		3
ASW021		**ASW022**		**ASW023**		**ASW024**	
24.0	3.0	26.0	2.0	26.0	2.0	26.0	2.0
	5		3		3		3
ASW025		**ASW026**		**ASW027**		**ASW028**	
26.0	2.5	26.0	3.0	27.0	2.0	27.0	3.0
	4		5		3		5
ASW029		**ASW030**		**ASW031**		**ASW032**	
25.0	2.0	27.0	2.0	26.0	2.0	26.0	2.5
	3		3		3		4
ASW033		**ASW034**		**ASW035**		**ASW036**	
25.0	2.5	25.0	2.5	26.0	2.0	25.0	2.5
	4		4		3		4
ASW037		**ASW038**		**ASW039**		**ASW040**	
26.0	2.0	26.0	2.0	27.0	2.5	26.0	2.0
	3		3		4		3
ASW041		**ASW042**		**ASW043**		**ASW044**	
23.0	2.0	24.0	2.0	24.0	2.0	23.0	2.0
	3		3		3		3
ASW045		**ASW046**		**ASW047**		**ASW048**	
24.0	2.5	23.0	2.5	25.0	1.5	24.0	2.0
	4		4		2		3
ASW049		**ASW050**		**ASW051**		**ASW052**	
23.0	2.0	22.0	2.0	24.0	2.0	22.0	2.0
	3		3		3		3
ASW053		**ASW054**		**ASW055**		**ASW056**	
22.0	2.0	25.0	1.5	22.0	2.0	22.0	2.5
	3		2		3		4
ASW057		**ASW058**		**ASW059**		**ASW060**	
26.0	1.0	25.0	2.5	25.0	1.5	26.0	2.0
	2		4		2		3
ASW061		**ASW062**		**ASW063**		**ASW064**	
25.0	1.5	25.0	2.0	25.0	1.0	25.0	3.0
	2		3		2		5
ASW065		**ASW066**		**ASW067**		**ASW068**	
24.0	2.5	25.0	3.0	26.0	2.5	27.0	1.5
	4		5		4		2
ASW069		**ASW070**		**ASW071**		**ASW072**	
27.0	2.5	25.0	2.5	25.0	2.0	27.0	1.5
	4		4		3		2
ASW073		**ASW074**		**ASW075**		**ASW076**	
25.0	2.0	26.0	2.5	29.0	3.0	27.0	2.0
	3		4		5		3
ASW077		**ASW078**		**ASW079**		**ASW080**	
27.0	2.5	29.0	3.0	29.0	3.5	29.0	3.0
	4		5		6		5

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Dave Sizemore | **Date: 07/13/2017** | **Time: 11:43**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW081		**ASW082**		**ASW083**		**ASW084**	
27.0	3.0	29.0	3.5	30.0	2.5	30.0	3.0
	5		6		4		5
ASW085		**ASW086**		**ASW087**		**ASW088**	
27.0	1.5	27.0	2.5	26.0	2.5	27.0	1.5
	2		4		4		2
ASW089		**ASW090**		**ASW091**		**ASW092**	
28.0	2.5	26.0	2.5	27.0	2.0	26.0	2.0
	4		4		3		3
ASW093		**ASW094**		**ASW095**		**ASW096**	
28.0	1.0	26.0	2.5	27.0	1.5	27.0	1.5
	2		4		2		2
ASW097		**ASW098**		**ASW099**		**ASW100**	
27.0	2.0	27.0	2.0	26.0	2.0	26.0	2.0
	3		3		3		3
ASW101		**ASW102**		**ASW103**		**ASW104**	
27.0	2.5	28.0	2.0	26.0	2.5	27.0	2.0
	4		3		4		3
ASW105		**ASW106**		**ASW107**		**ASW108**	
25.0	2.0	26.0	3.0	26.0	3.0	26.0	2.5
	3		5		5		4
ASW109		**ASW110**		**ASW111**		**ASW112**	
29.0	3.0	26.0	2.0	28.0	2.5	28.0	2.5
	5		3		4		4
ASW113		**ASW114**		**ASW115**		**ASW116**	
27.0	2.5	26.0	2.5	28.0	3.0	28.0	2.0
	4		4		5		3
ASW117		**ASW118**		**ASW119**		**ASW120**	
26.0	3.0	27.0	2.0	28.0	1.5	28.0	2.0
	5		3		3		3
ASW121		**ASW122**		**ASW123**		**ASW124**	
28.0	1.5	26.0	2.5	29.0	1.5	27.0	1.5
	3		4		3		2
ASW125		**ASW126**		**ASW127**		**ASW128**	
28.0	1.5	26.0	2.0	27.0	2.0	27.0	2.0
	3		3		3		3
ASW129		**ASW130**		**ASW131**		**ASW132**	
28.0	2.0	29.0	2.0	28.0	1.5	29.0	2.0
	3		3		3		3
ASW133		**ASW134**		**ASW135**		**ASW136**	
29.0	2.0	28.0	1.5	28.0	1.5	29.0	1.5
	3		3		3		3
ASW137		**ASW138**		**ASW139**		**ASW140**	
28.0	2.0	29.0	2.5	27.0	3.0	29.0	2.0
	3		4		5		3
ASW141		**ASW142**		**ASW143**		**ASW144**	
29.0	2.0	29.0	2.0	29.0	1.5	28.0	2.0
	3		3		3		3
ASW145		**ASW146**		**ASW147**		**ASW148**	
28.0	2.0	28.0	2.0	29.0	2.0	29.0	2.0
	3		3		3		3
ASW149		**ASW150**		**ASW151**		**ASW152**	
28.0	3.5	28.0	3.5	30.0	3.5	28.0	3.0
	6		6		6		5
ASW153		**ASW154**		**ASW155**		**ASW156**	
29.0	2.5	28.0	3.0	28.0	3.5	30.0	3.5
	4		5		6		6
ASW157		**ASW158**		**ASW159**		**ASW160**	
29.0	3.5	29.0	3.5	30.0	3.5	27.0	3.5
	6		6		6		6
ASW161		**ASW162**		**ASW163**		**ASW164**	
29.0	4.0	27.0	3.5	29.0	3.0	29.0	2.0
	7		6		5		3

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Dave Sizemore | **Date: 07/13/2017** | **Time: 11:43**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW165		**ASW166**		**ASW167**		**ASW168**	
30.0	1.5	30.0	2.0	29.0	2.5	29.0	3.5
	3		3		4		6
ASW169		**ASW170**		**ASW171**		**ASW172**	
30.0	1.5	29.0	2.0	28.0	2.5	28.0	2.5
	3		3		4		4
ASW173		**ASW174**		**ASW175**		**ASW176**	
29.0	1.5	29.0	2.0	29.0	1.5	30.0	2.0
	3		3		3		3
ASW177		**ASW178**		**ASW179**		**ASW180**	
30.0	2.0	29.0	2.5	25.0	2.5	28.0	2.5
	3		4		4		4
ASW181		**ASW182**		**ASW183**		**ASW184**	
26.0	2.5	25.0	2.5	26.0	2.5	26.0	2.5
	4		4		4		4
ASW185		**ASW186**		**ASW187**		**ASW188**	
27.0	2.5	26.0	2.5	26.0	2.5	25.0	2.5
	4		4		4		4
ASW189		**ASW190**		**ASW191**		**ASW192**	
26.0	2.5	26.0	2.5	26.0	2.5	26.0	2.5
	4		4		4		4
ASW193		**ASW194**		**ASW195**		**ASW196**	
26.0	2.5	26.0	2.5	25.0	2.0	28.0	2.5
	4		4		3		4
ASW197		**ASW198**		**ASW199**		**ASW200**	
29.0	2.5	28.0	2.0	30.0	2.0	27.0	2.0
	4		3		3		3
ASW201		**ASW202**		**ASW203**		**ASW204**	
27.0	3.0	19.0	1.5	29.0	2.0	23.0	1.5
	5		2		3		2
ASW205		**ASW206**		**ASW207**		**ASW208**	
23.0	2.0	24.0	2.0	24.0	2.0	23.0	1.5
	3		3		3		2
ASW209		**ASW210**		**ASW211**		**ASW212**	
29.0	1.5	23.0	1.5	25.0	1.0	23.0	1.5
	3		2		2		2
ASW213		**ASW214**		**ASW215**		**ASW216**	
213.0	2.0	24.0	1.0	23.0	2.0	23.0	1.5
	8		2		3		2
ASW217		**ASW218**		**ASW219**		**ASW220**	
24.0	1.0	23.0	1.5	24.0	2.0	24.0	1.0
	2		2		3		2
ASW221		**ASW222**		**ASW223**		**ASW224**	
23.0	3.0	24.0	1.5	24.0	2.0	20.0	4.5
	5		2		3		7
ASW225		**ASW226**		**ASW227**		**ASW228**	
24.0	1.5	25.0	2.0	25.0	1.0	25.0	3.5
	2		3		2		6
ASW229		**ASW230**		**ASW231**		**ASW232**	
24.0	2.5	24.0	1.5	24.0	2.0	23.0	3.0
	4		2		3		5
ASW233		**ASW234**		**ASW235**		**ASW236**	
24.0	2.0	11.0	3.0	15.0	3.0	11.0	3.0
	3		4		4		4
ASW237		**ASW238**		**ASW239**		**ASW240**	
12.0	3.5	13.0	3.5	18.0	4.5	18.0	3.5
	5		5		7		5
ASW241		**ASW242**		**ASW243**		**ASW244**	
15.0	3.5	14.0	3.5	15.0	3.5	14.0	2.5
	5		5		5		3

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: Dave Sizemore | **Date: 07/13/2017** | **Time: 11:43**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW245		**ASW246**		**ASW247**		**ASW248**	
14.0	3.5	14.0	3.5	18.0	4.5	19.0	2.0
	5		5		7		3
ASW249		**ASW250**		**ASW251**		**ASW252**	
19.0	2.5	19.0	2.0	19.0	2.5	18.0	3.0
	4		3		4		4
ASW253		**ASW254**		**ASW255**		**ASW256**	
20.0	3.5	19.0	4.0	19.0	4.0	19.0	3.0
	5		6		6		4
ASW257		**ASW258**		**ASW259**		**ASW260**	
19.0	3.0	19.0	3.0	19.0	4.5	19.0	3.0
	4		4		7		4
ASW261		**ASW262**		**ASW263**		**ASW264**	
19.0	3.5	19.0	4.0	19.0	3.5	19.0	3.0
	5		6		5		4
ASW265		**ASW266**		**ASW267**		**ASW268**	
20.0	4.5	19.0	4.0	19.0	3.5	19.0	2.5
	7		6		5		4
ASW269		**ASW270**		**ASW271**		**ASW272**	
19.0	2.0	20.0	3.5	19.0	3.5	17.0	5.0
	3		5		5		7
ASW273		**ASW274**		**ASW275**		**ASW276**	
19.0	4.0	18.0	3.0	19.0	3.5	18.0	2.5
	6		4		5		4
ASW277		**ASW278**		**ASW279**			
19.0	2.5	19.0	2.5	19.0	4.0		
	4		4		6		

Technician Signature:

Reviewer Signature:

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore	Date: 7/27/17	Time: 7:45

Maintenance & Monitoring

Item	Completed (yes/no)	Comments or Notes
System Operational on Arrival ?	Yes	
System Operational on Departure?	Yes	
Alarms on Upon Arrival?	No	
Filters Checked?	Yes	
Condensate Checked?	Yes	
Oil Level Checked? How Full?	Yes	3/4
WD40 Applied to Manifold Enclosure Joints and Bolts? (Quarterly)	No	
Maintenance Needed?	Ne	

Run Time and Electric Reading	Hour Meter:	556.6	Electric Meter:	113976.3

Air Sparge Compressor Readings - By Zone

Zone 1 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 1 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	57	60	80.9	103.8	736	86.2

Zone 1 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
103.8	43.6	285	85.4	83

Zone 2 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 2 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	55	57	80.5	104	385	86.2

Zone 2 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
103.9	44.9	305	85.5	79

Zone 3 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 3 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	55	49	80	104.5	495	86

Zone 3 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
103.6	43.7	310	85.3	81

Zone 4 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 4 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	50	57	81.5	103.8	500	86.1

Zone 4 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
103.8	43.8	325	86.1	89.2

Air Sparge Readings - By Leg

Observed Flow Rate (SCFM)	Leg Z2-L4 FT-201	Leg Z2-L2 FT-202	Leg Z2-L1 FT-203	Leg Z2-L3 FT-204	Leg Z1-L1 FT-205	Leg Z1-L2 FT-206	Leg Z1-L3 FT-207	Leg Z1-L4 FT-208
	100	95	97	108	89	95	91	80
Pressure (psi)	PI-201	PI-202	PI-203	PI-204	PI-205	PI-206	PI-207	PI-208
	30	30	30	30	36	28	28	28
Observed Flow Rate (SCFM)	Leg Z3-L2 FT-209	Leg Z3-L3 FT-210	Leg Z3-L1 FT-211	Leg Z4-L1 FT-212	Leg Z4-L2 FT-213			
	106	98	104	100	101			
Pressure (psi)	PI-209	PI-210	PI-211	PI-212	PI-213			
	25	30	29	29	25			

$$Corrected\ Flow\ Rate = Observed\ Flow\ Rate * \left(\sqrt{\frac{SG * T + 460}{36 * [P + 14.7]}}\right)^{-1}$$

Groundwater Levels (ft BTOC)

MW0011 (Z1)	MW0011 (Z3)	MW0012 (Z1)	MW0012 (Z3)	MW0014 (Z3)	MW0015 (Z3)	MW0021 (Z2)	MW0022 (Z2)	MW0023 (Z2)
0	0	0	0	0	0	0	0	0
MW0030 (Z1)	**MW0032 (Z4)**	**MW0033 (Z1)**	**MW0036 (Z4)**	**MW0037 (Z1)**	**MW0040 (Z4)**	**Note: >0 indicates water flowing from well upon well cap removal; Z# indicates Zone in operation**		
0	0	0	0	0	0			

Notes: System went down due to voltage alarm. Jim Frydl assists with system restart. Indicates may be caused by voltage spike.

Collected air samples from ventilation tunnel and throughout system footprint. Water samples collected from ventilation tunnel.

NM indicates not measured.

Geosyntec consultants

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore | **Date: 7/27/17** | **Time: 7:45**

Manifold Group Temperature Readings (°F)

Zone 1 (Z1):	87	Zone 2 (Z2):	87	Zone 3 (Z3):	86	Zone 4 (Z4):	84

Air Sparge System Readings

Pressure (PSI)	Flow (ACFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW01		**ASW02**		**ASW03**		**ASW04**	
29	1.5	29	2.0	29	1.5	29	2.0
	3		3		3		3
ASW05		**ASW06**		**ASW07**		**ASW08**	
30	3.0	29	1.5	29	2.0	30	3.0
	5		3		3		5
ASW09		**ASW10**		**ASW11**		**ASW12**	
30	3.0	30	2.0	29	3.0	28	3.0
	5		3		5		5
ASW13		**ASW14**		**ASW15**		**ASW16**	
27	2.0	28	2.0	30.0	3.0	28	3.0
	3		3		5		5
ASW17		**ASW18**		**ASW19**		**ASW20**	
28	2.0	29	4.0	27	3.0	28	2.0
	3		7		5		3
ASW21		**ASW22**		**ASW23**		**ASW24**	
28	2.0	27	2.0	28	3.0	27	3.0
	3		3		5		5
ASW25		**ASW26**		**ASW27**		**ASW28**	
28	3.0	29	2.0	30	1.0	28	3.0
	5		3		2		5
ASW29		**ASW30**		**ASW31**		**ASW32**	
30	2.0	30	2.0	29	2.0	29	3.0
	3		3		3		5
ASW33		**ASW34**		**ASW35**		**ASW36**	
30	3.0	29	3.0	29	2.0	29	2.0
	5		5		3		3
ASW37		**ASW38**		**ASW39**		**ASW40**	
29	3.0	29	2.0	29	2.0	30	2.0
	5		3		3		3
ASW41		**ASW42**		**ASW43**		**ASW44**	
30	2.0	30	2.0	30	3.0	29	2.0
	3		3		5		3
ASW45		**ASW46**		**ASW47**		**ASW48**	
30	2.0	29	3.0	28	3.0	28	2.0
	3		5		5		3
ASW49		**ASW50**		**ASW51**		**ASW52**	
29	2.0	29	2.0	30	3.0	29	3.0
	3		3		5		5
ASW53		**ASW54**		**ASW55**		**ASW56**	
29	2.0	29	3.0	29	2.0	30	3.0
	3		5		3		5
ASW57		**ASW58**		**ASW59**		**ASW60**	
29	2.0	29	2.0	29	2.0	29	3.0
	3		3		3		5
ASW61		**ASW62**		**ASW63**		**ASW64**	
28	2.0	28	2.0	28	2.0	28	2.0
	3		3		3		3
ASW65		**ASW66**		**ASW67**		**ASW68**	
29	3.0	29	3.0	28	2.0	27	3.0
	5		5		3		5
ASW69		**ASW70**		**ASW71**		**ASW72**	
26	3.0	29	3.0	29	2.0	29	2.0
	5		5		3		3
ASW73		**ASW74**		**ASW75**		**ASW76**	
27	3.0	27	2.0	29	3.0	28	2.0
	5		3		5		3
ASW77		**ASW78**		**ASW79**		**ASW80**	
28	2.0	28	2.0	29	3.0	28	2.0
	3		3		5		3

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore | **Date: 7/27/17** | **Time: 7:45**

Air Sparge System Readings

MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)
ASW81		**ASW82**		**ASW83**		**ASW84**	
30	3.0	29	2.0	29	3.0	28	3.0
	5		3		5		5
ASW85		**ASW86**		**ASW87**		**ASW88**	
28	3.0	29	3.0	29	3.0	30	3.0
	5		5		5		5
ASW89		**ASW90**		**ASW91**		**ASW92**	
29	4.0	29	3.0	29	2.0	29	2.0
	7		5		3		3
ASW93		**ASW94**		**ASW95**		**ASW96**	
29	3.0	29	3.0	30	3.0	30	2.0
	5		5		5		3
ASW97		**ASW98**		**ASW99**		**ASW100**	
29	2.0	30	3.0	29	3.0	28	3.0
	3		5		5		5
ASW101		**ASW102**		**ASW103**		**ASW104**	
27	2.0	29	3.0	30	2.0	30	2.0
	3		5		3		3
ASW105		**ASW106**		**ASW107**		**ASW108**	
29	3.0	29	2.0	29	3.0	30	2.0
	5		3		5		3
ASW109		**ASW110**		**ASW111**		**ASW112**	
29	2.0	30	3.0	30	3.0	29	2.0
	3		5		5		3
ASW113		**ASW114**		**ASW115**		**ASW116**	
29	2.0	28	2.0	28	2.0	27	2.0
	3		3		3		3
ASW117		**ASW118**		**ASW119**		**ASW120**	
26	2.0	26	3.0	30	3.0	29	3.0
	3		5		5		5
ASW121		**ASW122**		**ASW123**		**ASW124**	
30	2.0	30	2.0	29	2.0	26	3.0
	3		3		3		5
ASW125		**ASW126**		**ASW127**		**ASW128**	
28	3.0	28	3.0	28	3.0	28	2.0
	5		5		5		3
ASW129		**ASW130**		**ASW131**		**ASW132**	
29	2.0	30	2.0	30	2.0	30	2.0
	3		3		3		3
ASW133		**ASW134**		**ASW135**		**ASW136**	
29	2.0	29	2.0	30	3.0	30	2.0
	3		3		5		3
ASW137		**ASW138**		**ASW139**		**ASW140**	
30	2.0	30	2.0	29	2.0	29	2.0
	3		3		3		3
ASW141		**ASW142**		**ASW143**		**ASW144**	
28	2.0	29	2.0	30	2.0	29	2.0
	3		3		3		3
ASW145		**ASW146**		**ASW147**		**ASW148**	
29	2.0	29	2.0	30	3.0	30	2.0
	3		3		5		3
ASW149		**ASW150**		**ASW151**		**ASW152**	
30	2.0	30	2.0	29	2.0	29	2.0
	3		3		3		3
ASW153		**ASW154**		**ASW155**		**ASW156**	
29	3.0	29	3.0	30	2.0	30	2.0
	5		5		3		3
ASW157		**ASW158**		**ASW159**		**ASW160**	
30	2.0	29	2.0	28	2.0	30	3.0
	3		3		3		5
ASW161		**ASW162**		**ASW163**		**ASW164**	
29	2.0	29	2.0	30	2.0	30	2.0
	3		3		3		3

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore | **Date: 7/27/17** | **Time: 7:45**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.							
ASW165		**ASW166**		**ASW167**		**ASW168**			
28	3.0	28	2.0	29	2.0	30	2.0		
	5		3		3		3		
ASW169		**ASW170**		**ASW171**		**ASW172**			
27	3.0	26	3.0	27	3.0	29	3.0		
	5		5		5		5		
ASW173		**ASW174**		**ASW175**		**ASW176**			
28	2.0	30	2.0	30	2.0	30	2.0		
	3		3		3		3		
ASW177		**ASW178**		**ASW179**		**ASW180**			
28	3.0	29	2.0	28	2.0	27	3.0		
	5		3		3		5		
ASW181		**ASW182**		**ASW183**		**ASW184**			
28	2.0	30	2.0	30	2.0	28	2.0		
	3		3		3		3		
ASW185		**ASW186**		**ASW187**		**ASW188**			
28	3.0	27	3.0	29	2.0	30	2.0		
	5		5		3		3		
ASW189		**ASW190**		**ASW191**		**ASW192**			
29	2.0	30	2.0	30	2.0	30	2.0		
	3		3		3		3		
ASW193		**ASW194**		**ASW195**		**ASW196**			
30	2.0	28	2.0	28	3.0	27	3.0		
	3		3		5		5		
ASW197		**ASW198**		**ASW199**		**ASW200**			
29	2.0	28	2.0	30	3.0	30	2.0		
	3		3		5		3		
ASW201		**ASW202**		**ASW203**		**ASW204**			
28	3.0	29	2.0	30	2.0	30	2.0		
	5		3		3		3		
ASW205		**ASW206**		**ASW207**		**ASW208**			
28	2.0	30	2.0	29	2.0	27	3.0		
	3		3		3		5		
ASW209		**ASW210**		**ASW211**		**ASW212**			
26	3.0	27	2.0	28	2.0	30	2.0		
	5		3		3		3		
ASW213		**ASW214**		**ASW215**		**ASW216**			
26	3.0	25	3.0	28	2.0	29	2.0		
	5		5		3		3		
ASW217		**ASW218**		**ASW219**		**ASW220**			
28	2.0	28	2.0	29	2.0	30	2.0		
	3		3		3		3		
ASW221		**ASW222**		**ASW223**		**ASW224**			
30	2.0	30	2.0	30	2.0	29	2.0		
	3		3		3		3		
ASW225		**ASW226**		**ASW227**		**ASW228**			
28	3.0	27	2.0	28	2.0	28	3.0		
	5		3		3		5		
ASW229		**ASW230**		**ASW231**		**ASW232**			
30	2.0	30	2.0	30	2.0	30	2.0		
	3		3		3		3		
ASW233		**ASW234**		**ASW235**		**ASW236**			
28	2.0	30	2.0	30	2.0	30	2.0		
	3		3		3		3		
ASW237		**ASW238**		**ASW239**		**ASW240**			
29	2.0	27	3.0	28	2.0	30	2.0		
	3		5		3		3		
ASW241		**ASW242**		**ASW243**		**ASW244**			
30	3.0	30	3.0	28	2.0	28	2.0		
	5		5		3		3		

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore | **Date: 7/27/17** | **Time: 7:45**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW245		**ASW246**		**ASW247**		**ASW248**	
30	2.0	29	2.0	30	2.0	27	3.0
	3		3		3		5
ASW249		**ASW250**		**ASW251**		**ASW252**	
27	3.0	27	2.0	27	3.0	30	2.0
	5		3		5		3
ASW253		**ASW254**		**ASW255**		**ASW256**	
28	2.0	28	2.0	30	2.0	30	2.0
	3		3		3		3
ASW257		**ASW258**		**ASW259**		**ASW260**	
29	2.0	29	2.0	25	3.0	26	2.0
	3		3		5		3
ASW261		**ASW262**		**ASW263**		**ASW264**	
26	3.0	27	3.0	29	2.0	29	2.0
	5		5		3		3
ASW265		**ASW266**		**ASW267**		**ASW268**	
30	2.0	30	2.0	28	2.0	28	2.0
	3		3		3		3
ASW269		**ASW270**		**ASW271**		**ASW272**	
30	2.0	30	2.0	29	2.0	28	2.0
	3		3		3		3
ASW273		**ASW274**		**ASW275**		**ASW276**	
27	2.0	27	3.0	27	3.0	27	4.0
	3		5		5		7
ASW277		**ASW278**		**ASW279**			
27	2.0	27	3.0	27	3.0		
	3		5		5		

Technician Signature: 

Reviewer Signature: 

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore	Date: 8/3/17	Time: 12:10

Maintenance & Monitoring

Item	Completed (yes/no)	Comments or Notes
System Operational on Arrival ?	Yes	
System Operational on Departure?	Yes	
Alarms on Upon Arrival?	No	
Filters Checked?	Yes	
Condensate Checked?	Yes	
Oil Level Checked? How Full?	Yes	3/4 full
WD40 Applied to Manifold Enclosure Joints and Bolts? (Quarterly)	No	
Maintenance Needed?	No	

Run Time and Electric Reading	Hour Meter:	721.6	Electric Meter:	128872.6

Air Sparge Compressor Readings - By Zone

Zone 1 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 1 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	75	66	87	103.8	335	98.2

Zone 1 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
103.9	47	261	94.6	61

Zone 2 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 2 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	50.5	55	87.4	104.2	288	107.6

Zone 2 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.0	46.7	259	94.8	62

Zone 3 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 3 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	50.5	70	89	104.3	262	98

Zone 3 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.1	48.1	239	95.8	64

Zone 4 - System, Trailer, and Pre-Receiver Tank Parameters

Compressor Readings During Zone 4 Operation	AMPs	Percent Operating Capacity (%)	Indoor Temperature (°F): TT-301	Pressure (psi): PT-101	Flow (SCFM): FT-101	Temp (°F): TT-101
	30	59	88.3	104.3	124	101.7

Zone 4 - Post-Receiver Tank Parameters

Receiver Tank (psi): PT-102	Post-Receiver Tank (psi): PT-103	Flow (SCFM): FT-102	Temp (°F): TT-102	Relative Humidity (%): RHT-101
104.4	51.3	111	94.2	64

Air Sparge Readings - By Leg

Observed Flow Rate (SCFM)	Leg Z2-L4 FT-201	Leg Z2-L2 FT-202	Leg Z2-L1 FT-203	Leg Z2-L3 FT-204	Leg Z1-L1 FT-205	Leg Z1-L2 FT-206	Leg Z1-L3 FT-207	Leg Z1-L4 FT-208
	114	113	116	119	97	96	77	85
Pressure (psi)	PI-201	PI-202	PI-203	PI-204	PI-205	PI-206	PI-207	PI-208
	29	30	29	30	36	29	26	30

Observed Flow Rate (SCFM)	Leg Z3-L2 FT-209	Leg Z3-L3 FT-210	Leg Z3-L1 FT-211	Leg Z4-L1 FT-212	Leg Z4-L2 FT-213	$Corrected\ Flow\ Rate = Observed\ Flow\ Rate * \left(\sqrt{\frac{SG * T + 460}{36 * [P + 14.7]}}\right)^{-1}$
	95	112	89	93	85	
Pressure (psi)	PI-209	PI-210	PI-211	PI-212	PI-213	
	31	25	40	24	19	

Groundwater Levels (ft BTOC)

MW0011 (Z1)	MW0011 (Z3)	MW0012 (Z1)	MW0012 (Z3)	MW0014 (Z3)	MW0015 (Z3)	MW0021 (Z2)	MW0022 (Z2)	MW0023 (Z2)
NM	NM	NM	NM	NM	NM	NM	NM	NM

MW0030 (Z1)	MW0032 (Z4)	MW0033 (Z1)	MW0036 (Z4)	MW0037 (Z1)	MW0040 (Z4)	Note: >0 indicates water flowing from well upon well cap removal; Z# indicates Zone in operation
NM	NM	NM	NM	NM	NM	

Geosyntec consultants

Notes:

NM indicates not measured.

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore	Date: 8/3/17	Time: 12:10

Manifold Group Temperature Readings (°F)

Zone 1 (Z1):	89	Zone 2 (Z2):	89	Zone 3 (Z3):	89	Zone 4 (Z4):	89

Air Sparge System Readings

Pressure (PSI)	Flow (ACFM) / Corrected Flow (SCFM)							
		MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.						
ASW01		**ASW02**		**ASW03**		**ASW04**		
28	3.0	27	2.5	30	2.0	28	3.0	
	5		4		3		5	
ASW05		**ASW06**		**ASW07**		**ASW08**		
28	2.0	29	2.0	28	2.5	28	3.0	
	3		3		4		5	
ASW09		**ASW10**		**ASW11**		**ASW12**		
29	2.0	24	2.0	27	3.0	27	2.5	
	3		3		5		4	
ASW13		**ASW14**		**ASW15**		**ASW16**		
27	3.0	22	4.0	29.0	2.0	27	3.0	
	5		6		3		5	
ASW17		**ASW18**		**ASW19**		**ASW20**		
28	2.5	25	2.0	23	3.0	25	3.0	
	4		3		5		5	
ASW21		**ASW22**		**ASW23**		**ASW24**		
25	3.0	23	3.0	25	2.5	25	3.0	
	5		5		4		5	
ASW25		**ASW26**		**ASW27**		**ASW28**		
25	3.0	25	3.0	22	3.0	28	3.0	
	5		5		5		5	
ASW29		**ASW30**		**ASW31**		**ASW32**		
30	2.0	30	2.0	27	2.0	28	3.0	
	3		3		3		5	
ASW33		**ASW34**		**ASW35**		**ASW36**		
29	3.0	27	2.0	27	2.0	25	3.0	
	5		3		3		5	
ASW37		**ASW38**		**ASW39**		**ASW40**		
27	3.0	28	3.0	28	2.0	25	2.0	
	5		5		3		3	
ASW41		**ASW42**		**ASW43**		**ASW44**		
33	2.0	25	3.0	27	3.0	29	2.0	
	4		5		5		3	
ASW45		**ASW46**		**ASW47**		**ASW48**		
28	2.0	28	3.0	28	3.0	28	3.0	
	3		5		5		5	
ASW49		**ASW50**		**ASW51**		**ASW52**		
30	2.0	29	2.0	24	3.0	29	3.0	
	3		3		5		5	
ASW53		**ASW54**		**ASW55**		**ASW56**		
28	3.0	29	2.0	30	2.0	30	2.0	
	5		3		3		3	
ASW57		**ASW58**		**ASW59**		**ASW60**		
28	3.0	29	3.0	28	2.0	30	2.0	
	5		5		3		3	
ASW61		**ASW62**		**ASW63**		**ASW64**		
30	2.0	29	3.0	27	3.0	27	2.0	
	3		5		5		3	
ASW65		**ASW66**		**ASW67**		**ASW68**		
30	2.0	30	2.0	29	2.0	27	3.0	
	3		3		3		5	
ASW69		**ASW70**		**ASW71**		**ASW72**		
29	3.0	29	2.0	28	3.0	29	3.0	
	5		3		5		5	
ASW73		**ASW74**		**ASW75**		**ASW76**		
29	3.0	29	3.0	26	2.0	29	2.0	
	5		5		3		3	
ASW77		**ASW78**		**ASW79**		**ASW80**		
29	2.0	28	3.0	25	3.0	29	2.0	
	3		5		5		3	

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore | **Date: 8/3/17** | **Time: 12:10**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.							
ASW81		**ASW82**		**ASW83**		**ASW84**	
27	3.0	27	3.0	27	3.0	29	2.0
	5		5		5		3
ASW85		**ASW86**		**ASW87**		**ASW88**	
27	2.0	27	3.0	27	3.0	29	3.0
	3		5		5		5
ASW89		**ASW90**		**ASW91**		**ASW92**	
27	3.0	27	3.0	28	3.0	29	3.0
	5		5		5		5
ASW93		**ASW94**		**ASW95**		**ASW96**	
29	2.0	28	2.0	28	3.0	29	3.0
	3		3		5		5
ASW97		**ASW98**		**ASW99**		**ASW100**	
28	3.0	29	3.0	29	3.0	29	2.0
	5		5		5		3
ASW101		**ASW102**		**ASW103**		**ASW104**	
30	2.0	29	2.0	29	3.0	28	3.0
	3		3		5		5
ASW105		**ASW106**		**ASW107**		**ASW108**	
28	3.0	28	3.0	29	2.0	28	3.0
	5		5		3		5
ASW109		**ASW110**		**ASW111**		**ASW112**	
28	3.0	28	3.0	29	2.0	27	3.0
	5		5		3		5
ASW113		**ASW114**		**ASW115**		**ASW116**	
30	3.0	28	2.0	29	2.0	28	2.0
	5		3		3		3
ASW117		**ASW118**		**ASW119**		**ASW120**	
27	2.0	29	3.0	28	2.0	29	2.0
	3		5		3		3
ASW121		**ASW122**		**ASW123**		**ASW124**	
30	3.0	28	2.0	30	2.0	29	3.0
	5		3		3		5
ASW125		**ASW126**		**ASW127**		**ASW128**	
28	3.0	30	3.0	29	3.0	29	2.0
	5		5		5		3
ASW129		**ASW130**		**ASW131**		**ASW132**	
27	3.0	29	3.0	29	3.0	29	2.0
	5		5		5		3
ASW133		**ASW134**		**ASW135**		**ASW136**	
29	2.0	29	2.0	29	2.0	28	3.0
	3		3		3		5
ASW137		**ASW138**		**ASW139**		**ASW140**	
28	3.0	29	2.0	30	3.0	29	2.0
	5		3		5		3
ASW141		**ASW142**		**ASW143**		**ASW144**	
29	2.0	29	2.0	29	2.0	28	3.0
	3		3		3		5
ASW145		**ASW146**		**ASW147**		**ASW148**	
28	2.0	30	2.0	30	3.0	29	3.0
	3		3		5		5
ASW149		**ASW150**		**ASW151**		**ASW152**	
27	3.0	28	3.0	28	3.0	28	3.0
	5		5		5		5
ASW153		**ASW154**		**ASW155**		**ASW156**	
28	3.0	29	3.0	30	2.0	25	2.0
	5		5		3		3
ASW157		**ASW158**		**ASW159**		**29.00**	
29	2.0	28	3.0	27	3.0	29	2.0
	3		5		5		3
ASW161		**ASW162**		**ASW163**		**ASW164**	
29	2.0	28	2.0	24	3.0	30	3.0
	3		3		5		5

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore | **Date: 8/3/17** | **Time: 12:10**

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.							
ASW165		**ASW166**		**ASW167**		**ASW168**			
29	2.0	28	2.0	29	2.0	29	2.0		
	3		3		3		3		
ASW169		**ASW170**		**ASW171**		**ASW172**			
30	2.0	29	2.0	29	2.0	28	2.0		
	3		3		3		3		
ASW173		**ASW174**		**ASW175**		**ASW176**			
29	2.0	30	3.0	30	3.0	29	3.0		
	3		5		5		5		
ASW177		**ASW178**		**ASW179**		**ASW180**			
28	3.0	29	3.0	28	3.0	26	3.0		
	5		5		5		5		
ASW181		**ASW182**		**ASW183**		**ASW184**			
25	2.0	28	3.0	29	3.0	25	4.0		
	3		5		5		6		
ASW185		**ASW186**		**ASW187**		**ASW188**			
27	3.0	28	3.0	27	2.0	26	2.0		
	5		5		3		3		
ASW189		**ASW190**		**ASW191**		**ASW192**			
28	2.0	29	2.0	30	2.0	27	3.0		
	3		3		3		5		
ASW193		**ASW194**		**ASW195**		**ASW196**			
28	2.0	28	2.0	30	2.0	29	2.0		
	3		3		3		3		
ASW197		**ASW198**		**ASW199**		**ASW200**			
29	2.0	30	3.0	29	2.0	29	3.0		
	3		5		3		5		
ASW201		**ASW202**		**ASW203**		**ASW204**			
30	3.0	30	3.0	18	2.0	28	3.0		
	5		5		3		5		
ASW205		**ASW206**		**ASW207**		**ASW208**			
28	3.0	28	2.0	30	2.0	29	3.0		
	5		3		3		5		
ASW209		**ASW210**		**ASW211**		**ASW212**			
30	3.0	29	2.0	28	3.0	30	2.0		
	5		3		5		3		
ASW213		**ASW214**		**ASW215**		**ASW216**			
30	3.0	18	2.0	19	3.0	26	2.0		
	5		3		4		3		
ASW217		**ASW218**		**ASW219**		**ASW220**			
19	3.0	29	2.0	29	2.0	30	2.0		
	4		3		3		3		
ASW221		**ASW222**		**ASW223**		**ASW224**			
29	3.0	30	3.0	20	3.0	28	3.0		
	5		5		5		5		
ASW225		**ASW226**		**ASW227**		**ASW228**			
28	3.0	30	3.0	30	2.0	30	3.0		
	5		5		3		5		
ASW229		**ASW230**		**ASW231**		**ASW232**			
29	3.0	28	3.0	29	2.0	29	3.0		
	5		5		3		5		
ASW233		**ASW234**		**ASW235**		**ASW236**			
19	3.0	18	3.0	18	2.0	18	2.0		
	4		4		3		3		
ASW237		**ASW238**		**ASW239**		**ASW240**			
19	2.0	19	3.0	17	2.0	20	2.0		
	3		4		3		3		
ASW241		**ASW242**		**ASW243**		**ASW244**			
17	2.0	19	2.0	18	3.0	20	2.0		
	3		3		4		3		

Launch Complex 39B O&M

LC39B Area, SWMU No. 9

Kennedy Space Center, Florida

Technician: D. Sizemore	Date: 8/3/17	Time: 12:10

Air Sparge System Readings

Pressure (PSI)	Flow (CFM) / Corrected Flow (SCFM)	MAKE SURE COMPRESSOR IS RUNNING BEFORE TAKING MEASUREMENTS.					
ASW245		**ASW246**		**ASW247**		**ASW248**	
18	2.0	18	2.0	30	3.0	18	3.0
	3		3		5		4
ASW249		**ASW250**		**ASW251**		**ASW252**	
19	3.0	19	2.0	15	2.0	20	3.0
	4		3		3		5
ASW253		**ASW254**		**ASW255**		**ASW256**	
19	2.0	19	3.0	19	3.0	17	3.0
	3		4		4		4
ASW257		**ASW258**		**ASW259**		**ASW260**	
17	3.0	20	3.0	20	1.0	18	3.0
	4		5		2		4
ASW261		**ASW262**		**ASW263**		**ASW264**	
21	5.0	19	3.0	19	5.0	15	3.0
	8		4		7		4
ASW265		**ASW266**		**ASW267**		**ASW268**	
18	3.0	20	3.0	19	2.0	17	3.0
	4		5		3		4
ASW269		**ASW270**		**ASW271**		**ASW272**	
18	3.0	18	2.0	19	3.0	18	2.0
	4		3		4		3
ASW273		**ASW274**		**ASW275**		**ASW276**	
19	2.0	20	1.0	19	2.0	21	2.0
	3		2		3		3
ASW277		**ASW278**		**ASW279**			
19	2.0	18	3.0	18	3.0		
	3		4		4		

Technician Signature:

Reviewer Signature:

APPENDIX B

WELL ABANDONMENT PERMITS

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STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793367

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194081-1 *CUP/WUP Number _____ *DID Number 534743 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0198
6. Space Launch Complex 39B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283736.4787 Longitude 803722.1831
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) Air Sparge system well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 2.92 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 58.6 ft. Cased Depth 56.6 ft. *Open Hole: From ____To____ft. *Screen: From 56.6 To 58.6ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft.	To 58.6 ft.	No. of Bags 1	Seal Material (Check One):	____Neat Cement	____Bentonite	X	Other Neat/Portland Cement	
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____	
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____	
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____	
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____	

18. *Surface Casing Diameter and Depth:

Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____

19. *Primary Casing Diameter and Depth:

Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____

20. *Liner Casing Diameter and Depth:

Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____

21. *Telescope Casing Diameter and Depth:

Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____
Dia ____in.	From ____ft.	To____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other____

22. Pump Type (If known):
____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):
Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:
*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194081-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

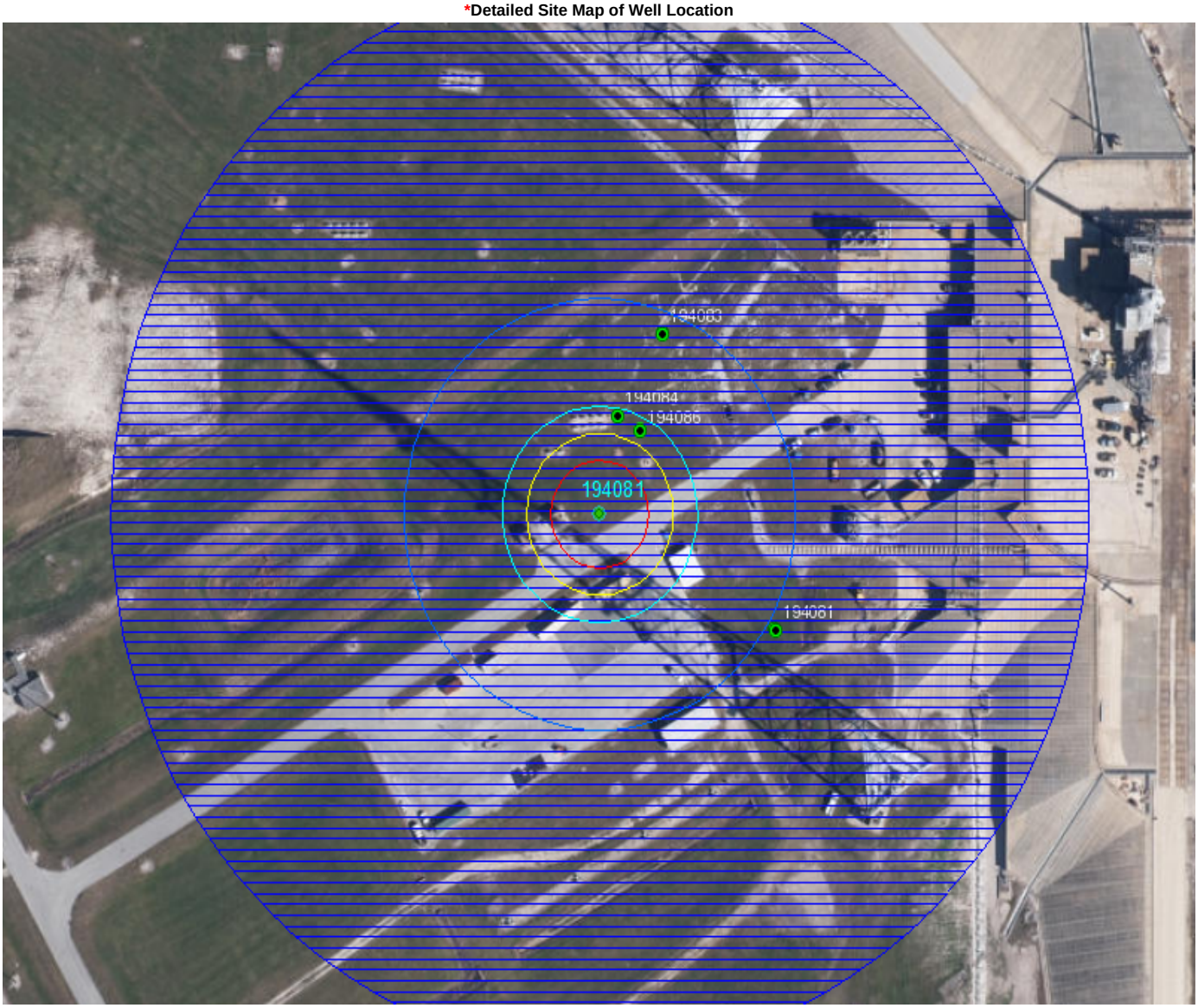
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

***Detailed Site Map of Well Location**



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793369

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194081-1 *CUP/WUP Number _____ *DID Number 535638 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0199

6. Space Launch Complex 39B, Kennedy Space Center , FL 32781
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E

8. Latitude 283736.7838 Longitude 803721.9755

9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: wells in area of new construction

11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage

Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____

____Other (Describe) Air Sparge system well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____

13. *Measured Static Water Level 1.91 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM

14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No

15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____

16. *Total Well Depth 58.1 ft. Cased Depth 56.1 ft. *Open Hole: From ____To____ft. *Screen: From 56.1 To 58.1ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft. To 58.1 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

18. *Surface Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

19. *Primary Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

20. *Liner Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

21. *Telescope Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

22. Pump Type (If known):
____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):
Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:

*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com

*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194081-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

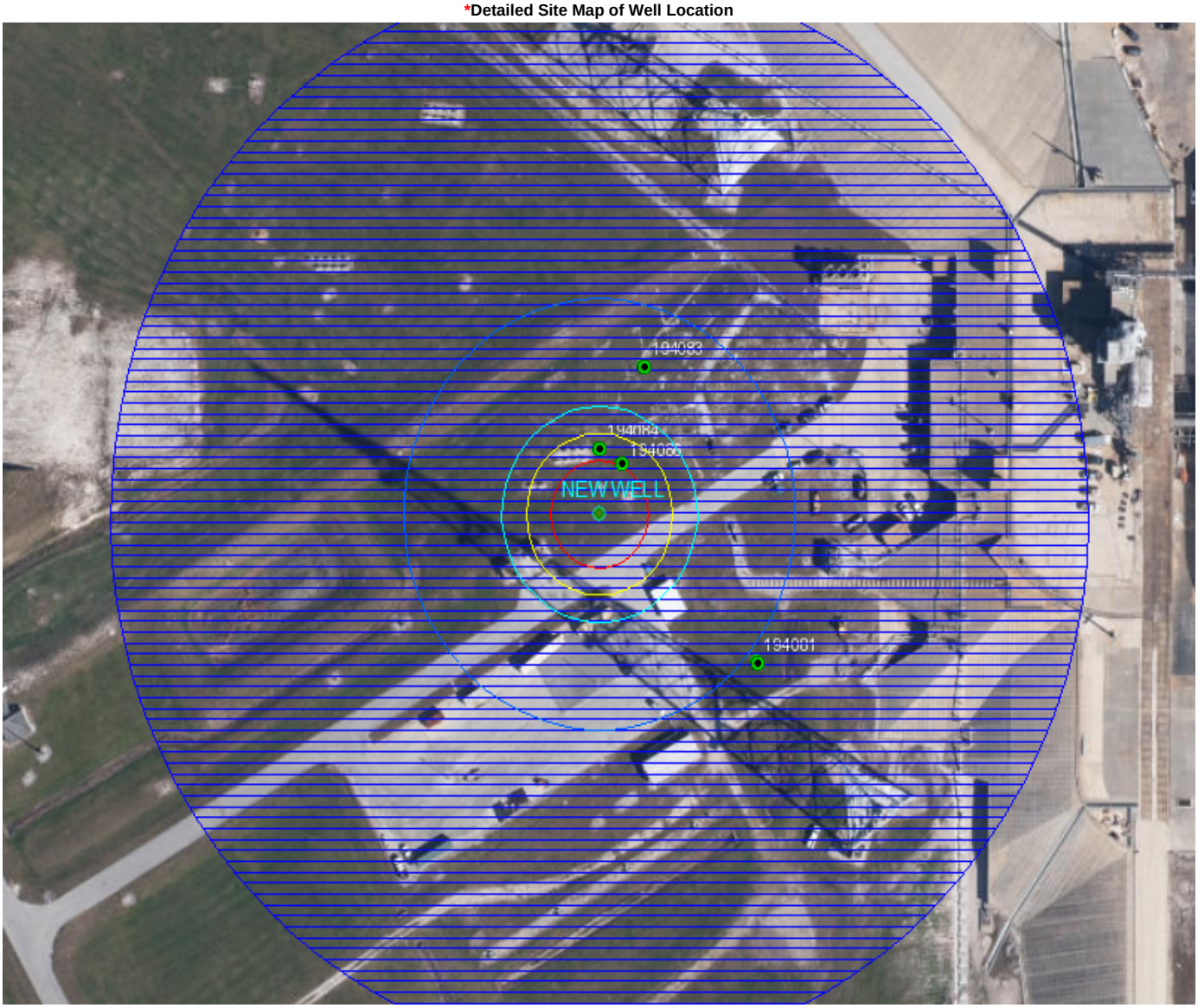
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793372

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194081-1 *CUP/WUP Number _____ *DID Number 535639 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0200
6. Space Launch Complex 39B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283736.7965 Longitude 803721.6955
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) Air Sparge system well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 3.1 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 58.9 ft. Cased Depth 56.9 ft. *Open Hole: From ____To____ft. *Screen: From 56.9 To 58.9ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 58.9 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194081-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

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4049 REID STREET, PALATKA, FL 32178-1429
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WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
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PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

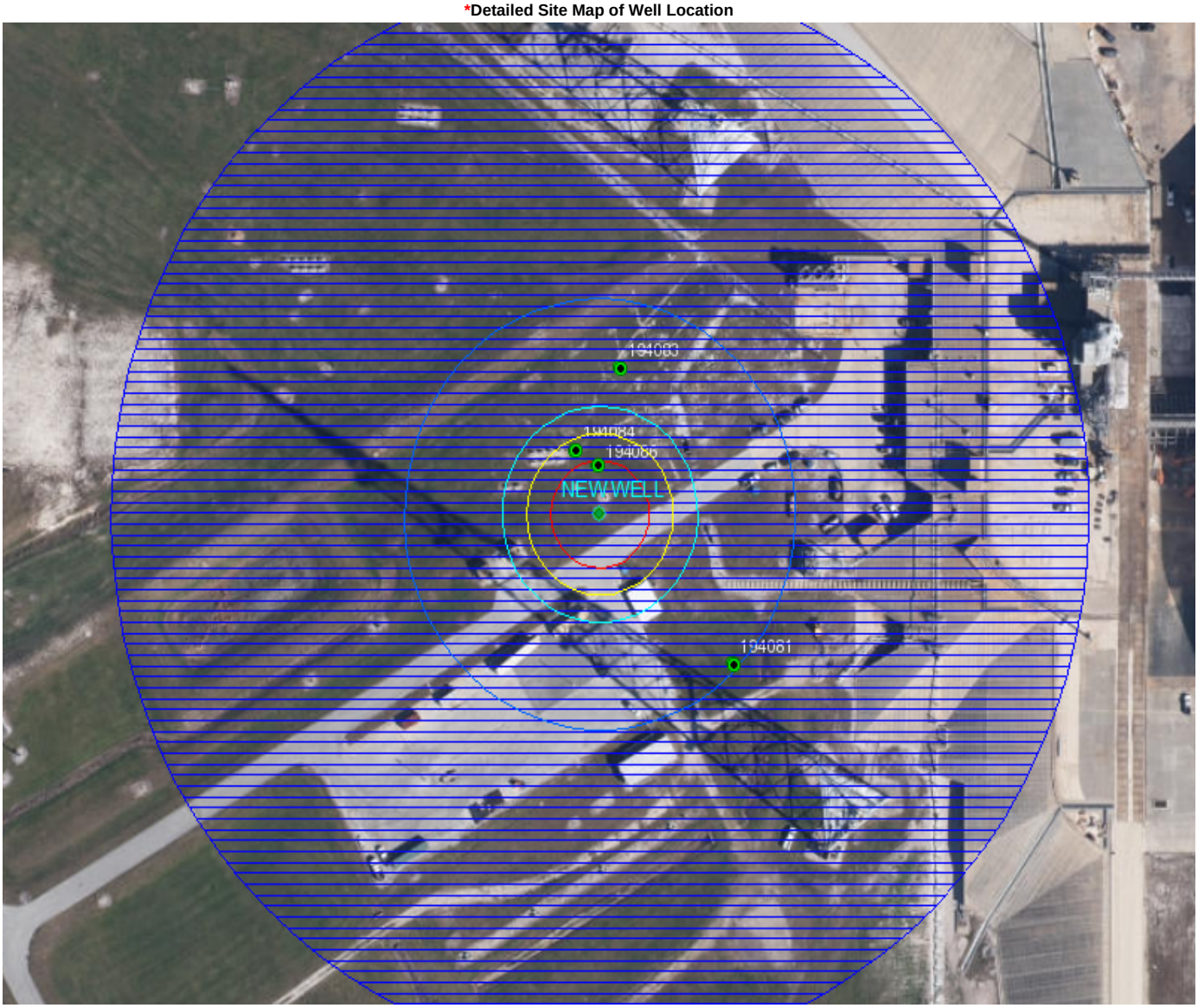
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

***Detailed Site Map of Well Location**



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793375

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194081-1 *CUP/WUP Number _____ *DID Number 535640 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0201
6. Space Launch Complex 39B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283736.5295 Longitude 803721.8259
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) Air Sparge system well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 2.74 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 58.6 ft. Cased Depth 56.6 ft. *Open Hole: From ____To____ft. *Screen: From 56.6 To 58.6ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 58.6 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194081-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

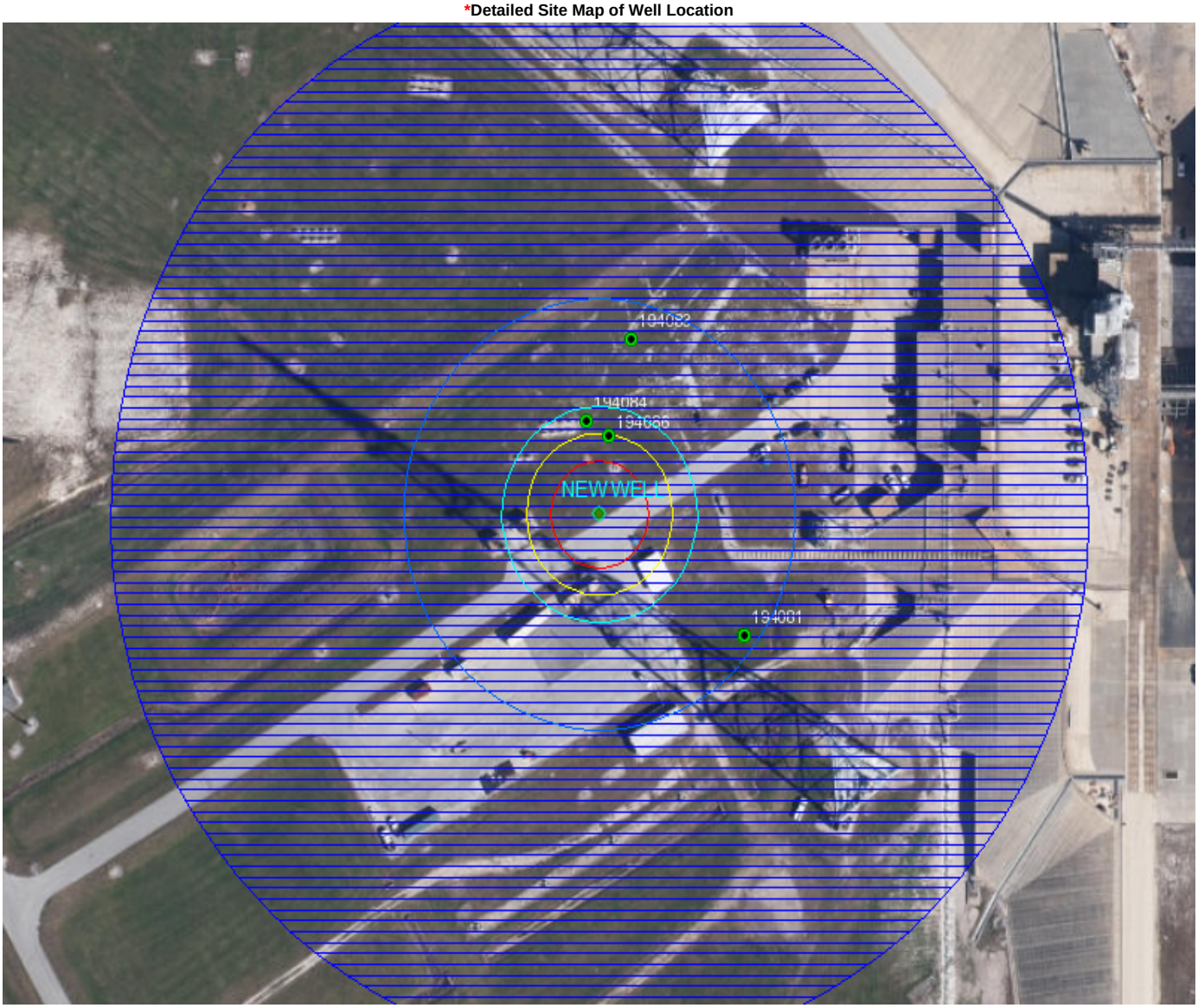
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793377

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194081-1 *CUP/WUP Number _____ *DID Number 535641 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/02/2022 5. Florida Unique ID ASW0202
6. Space Launch Complex 39B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283738.0043 Longitude 803721.2272
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84
10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic	____Landscape Irrigation	____Agricultural Irrigation	____Site Investigation
____Bottled Water Supply	____Recreation Area Irrigation	____Livestock	____Monitoring
____Public Water Supply (Limited Use/DOH)		____Nursery Irrigation	____Test
____Public Water Supply (Community or Non-Community/DEP)		____Commercial/Industrial Golf Course Irrigation	____Earth-Coupled Geothermal
____Class I Injection			____HVAC Supply
			____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage

Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____

____Other (Describe) Air Sparge system well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level .98 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 52.2 ft. Cased Depth 50.2 ft. *Open Hole: From ____To____ft. *Screen: From 50.2 To 52.2ft. Slot Size .01
17. *Abandonment: Other(Explain _____)
    From 0 ft. To 52.2 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194081-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

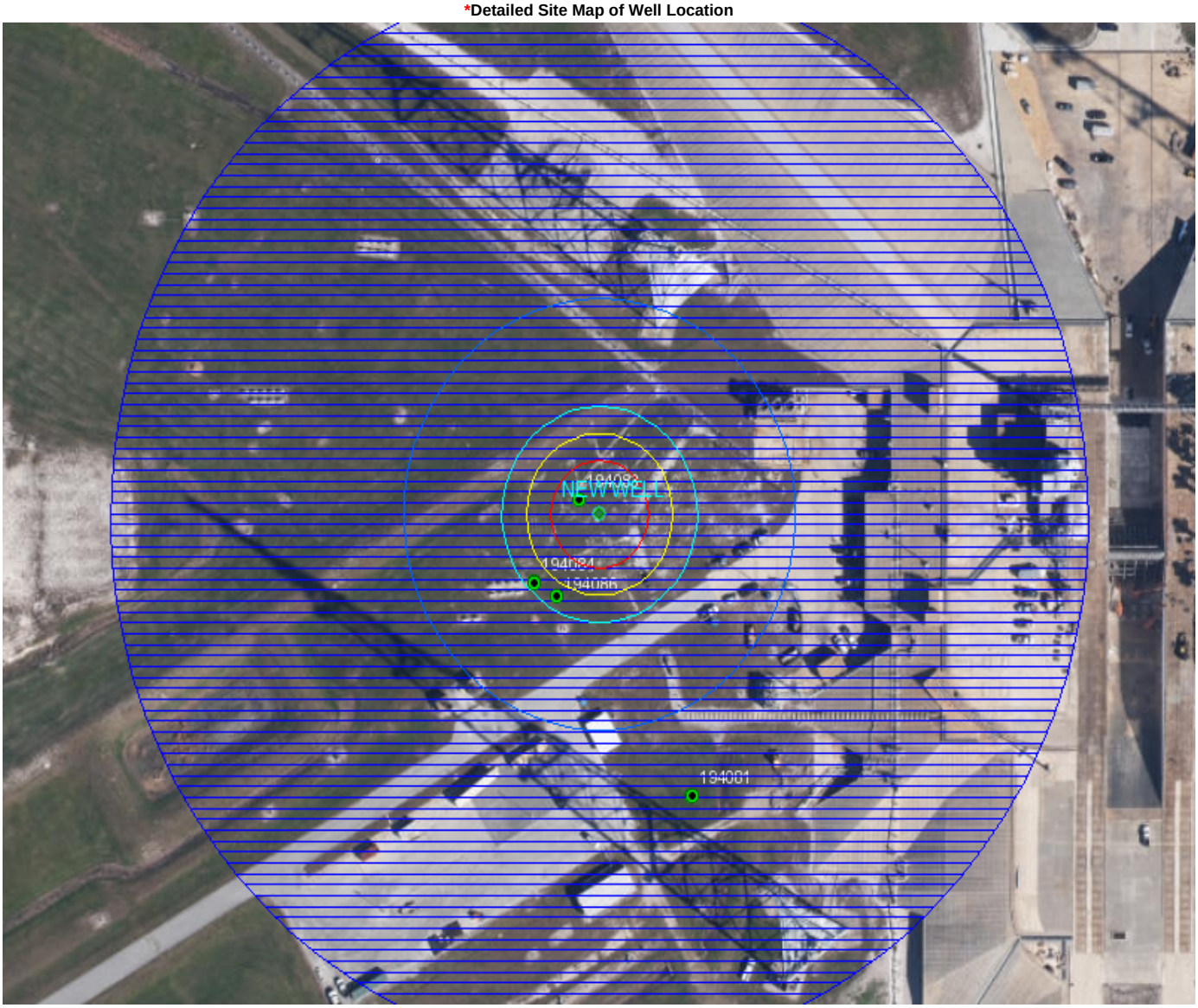
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793379

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194081-1 *CUP/WUP Number _____ *DID Number 535642 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/02/2022 5. Florida Unique ID ASW0204
6. Space Launch Complex 39B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283738.0255 Longitude 803721.0437
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) Air Sparge system well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level .15 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 51.6 ft. Cased Depth 49.6 ft. *Open Hole: From ____To____ft. *Screen: From 49.6 To 51.6ft. Slot Size .01

17. *Abandonment: Other(Explain) _____
    From 0 ft. To 51.6 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194081-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

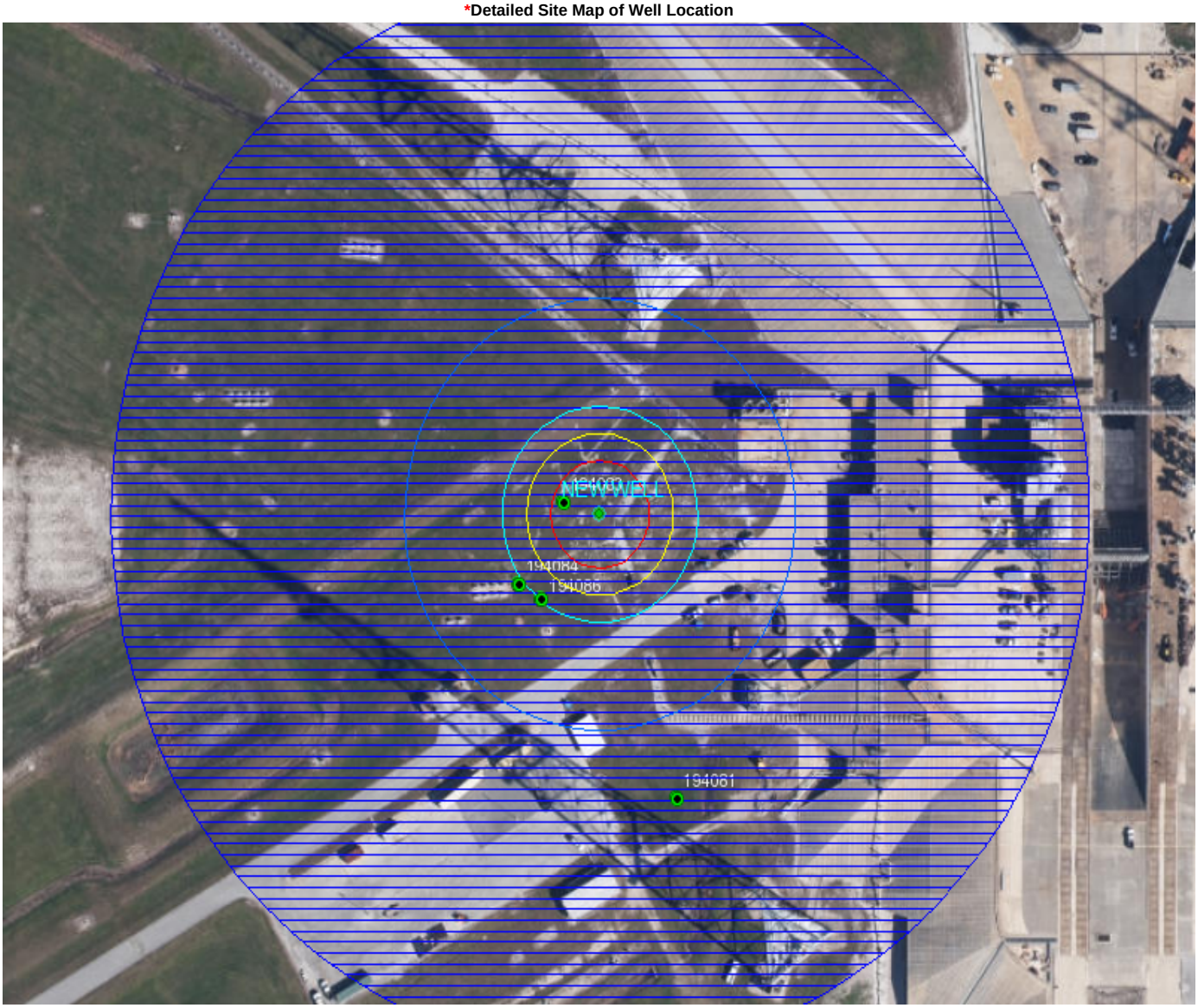
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest
[ ] Northwest
[ ] St. Johns River
[ ] South Florida
[ ] Suwannee River
[ ] DEP
[X] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793380

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194081-1 *CUP/WUP Number _____ *DID Number 535643 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 12/02/2022 5. Florida Unique ID ASW0230

6. Space Launch Complex 39B, Kennedy Space Center , FL 32781
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E

8. Latitude 283736.3516 Longitude 803721.2803

9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: wells in area of new construction

11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage

Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____

____Other (Describe) Air Sparge system well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____

13. *Measured Static Water Level 2.24 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM

14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No

15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____

16. *Total Well Depth 51.35 ft. Cased Depth 49.35 ft. *Open Hole: From ____To____ft. *Screen: From 49.35 To 51.35 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft. To 51.35 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

18. *Surface Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

19. *Primary Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

20. *Liner Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

21. *Telescope Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):

____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):

Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:

*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com

*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194081-1

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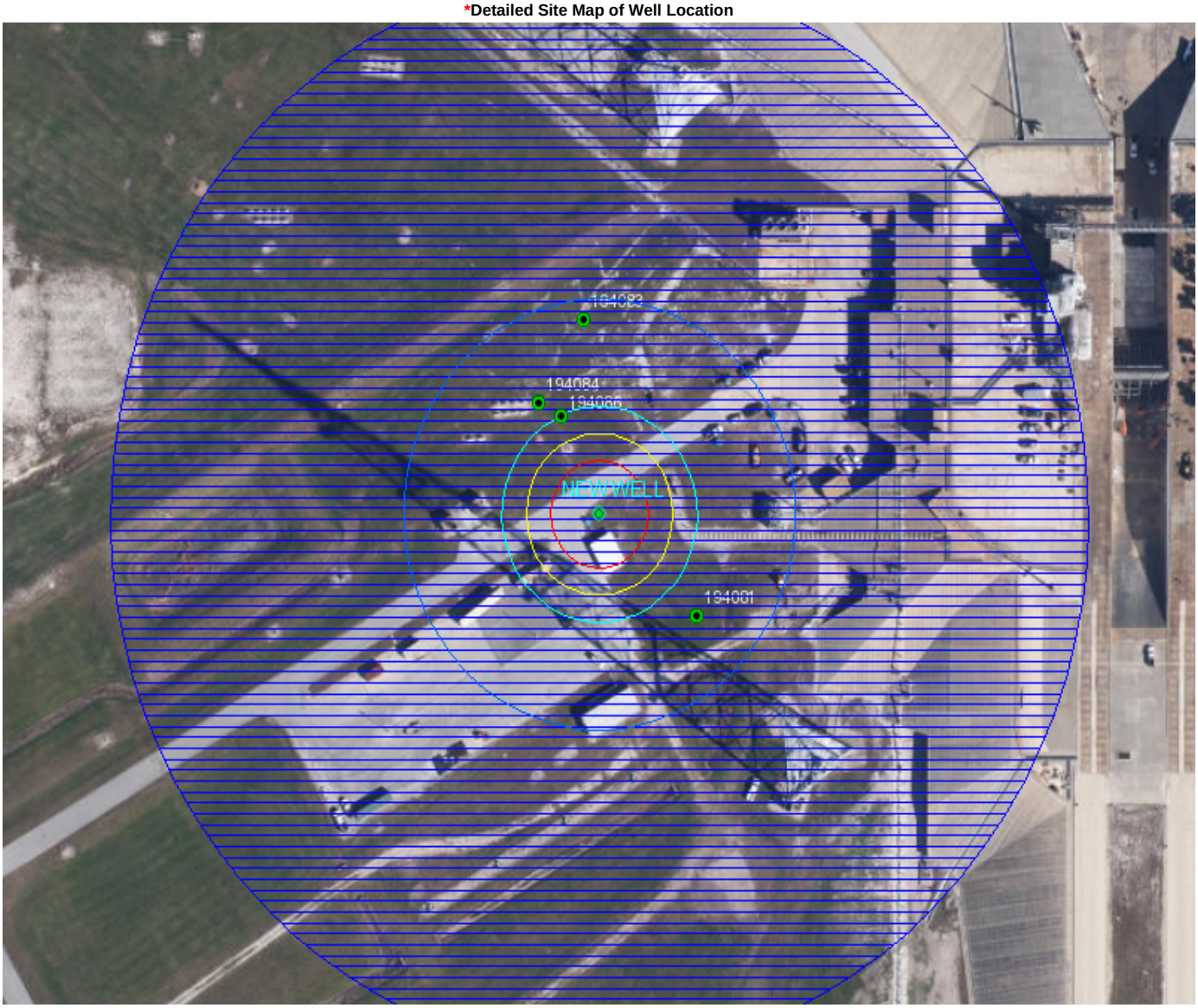
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9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

***Detailed Site Map of Well Location**



STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest	PLEASE, FILL OUT ALL APPLICABLE FIELDS
[ ] Northwest	(*Denotes Required Fields Where Applicable)
[ ] St. Johns River	
[ ] South Florida	
[ ] Suwannee River	
[ ] DEP	
[X] Delegated Authority (If Applicable)	**Brevard DOH**

Date Stamp

Confirmation# 793383

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194081-1 *CUP/WUP Number _____ *DID Number 535645 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 12/02/2022 5. Florida Unique ID ASW0233

6. Space Launch Complex 39B, Kennedy Space Center , FL 32781
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E

8. Latitude 283735.1226 Longitude 803721.3962

9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: wells in area of new construction

11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage

Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____

____Other (Describe) Air Sparge system well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____

13. *Measured Static Water Level 1.63 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM

14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No

15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____

16. *Total Well Depth 52.31 ft. Cased Depth 50.31 ft. *Open Hole: From ____To____ft. *Screen: From 50.31 To 52.31 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft. To 52.31 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

18. *Surface Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

19. *Primary Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

20. *Liner Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

21. *Telescope Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):

____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):

Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:

*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com

*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194081-1

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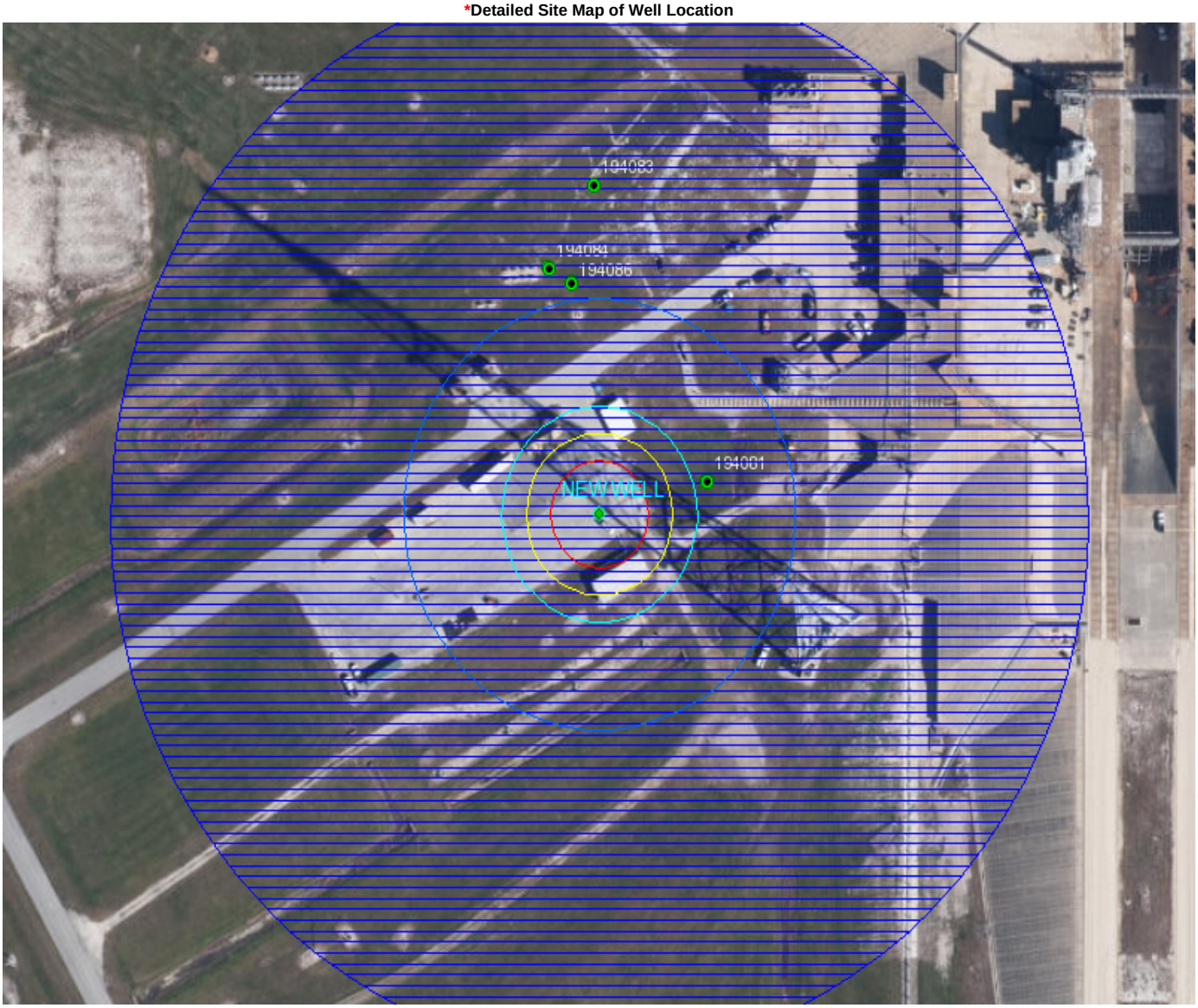
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WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

***Detailed Site Map of Well Location**



STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest
[ ] Northwest
[ ] St. Johns River
[ ] South Florida
[ ] Suwannee River
[ ] DEP
[X] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793331

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194083-1 *CUP/WUP Number _____ *DID Number 534744 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0177

6. Space Launch Complex 39 B, Kennedy Space Center , FL 32781
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E

8. Latitude 283738.5323 Longitude 803721.0649

9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction

11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage

Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____

____Other (Describe) Air Sparge well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____

13. *Measured Static Water Level .01 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM

14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No

15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____

16. *Total Well Depth 57.3 ft. Cased Depth 55.3 ft. *Open Hole: From ____To____ft. *Screen: From 55.3 To 57.3ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft. To 57.3 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

18. *Surface Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

19. *Primary Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

20. *Liner Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

21. *Telescope Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):

____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):

Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:

*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com

*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194083-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

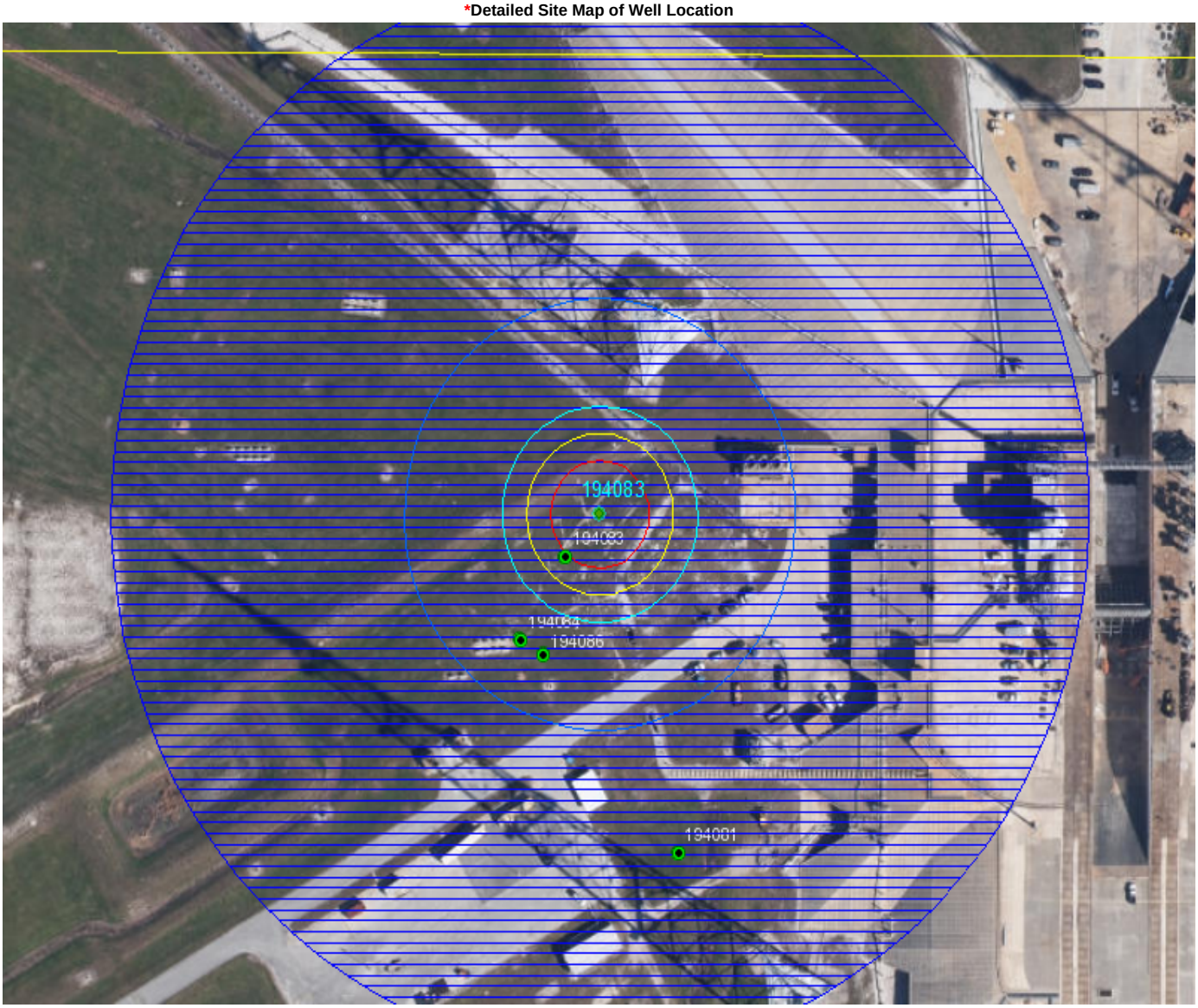
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793333

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194083-1 *CUP/WUP Number _____ *DID Number 535623 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0178

6. Space Launch Complex 39 B, Kennedy Space Center , FL 32781
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E

8. Latitude 283738.278 Longitude 803721.1856

9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction

11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage

Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____

____Other (Describe) Air Sparge well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____

13. *Measured Static Water Level 1.78 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM

14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No

15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____

16. *Total Well Depth 56.45 ft. Cased Depth 54.45 ft. *Open Hole: From ____To____ft. *Screen: From 54.45 To 56.4 5 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft. To 56.45 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

18. *Surface Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

19. *Primary Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

20. *Liner Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

21. *Telescope Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):

____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):

Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:

*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com

*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194083-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

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4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

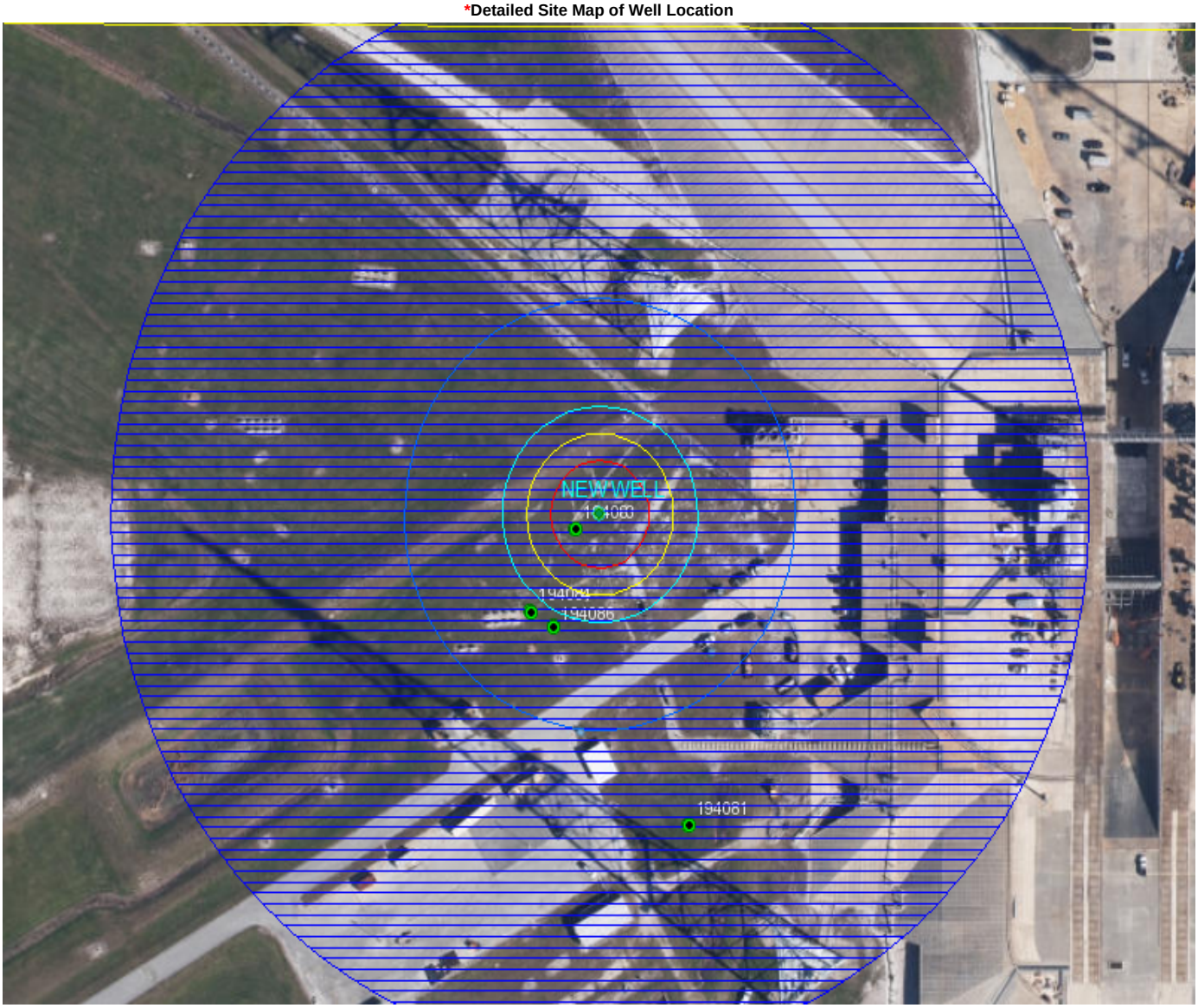
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
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***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793334

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194083-1 *CUP/WUP Number _____ *DID Number 535625 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0179
6. Space Launch Complex 39 B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283738.3903 Longitude 803720.9732
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) Air Sparge well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 1.35 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 57.65 ft. Cased Depth 55.65 ft. *Open Hole: From ____To____ft. *Screen: From 55.65 To 57.6 5 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 57.65 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194083-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

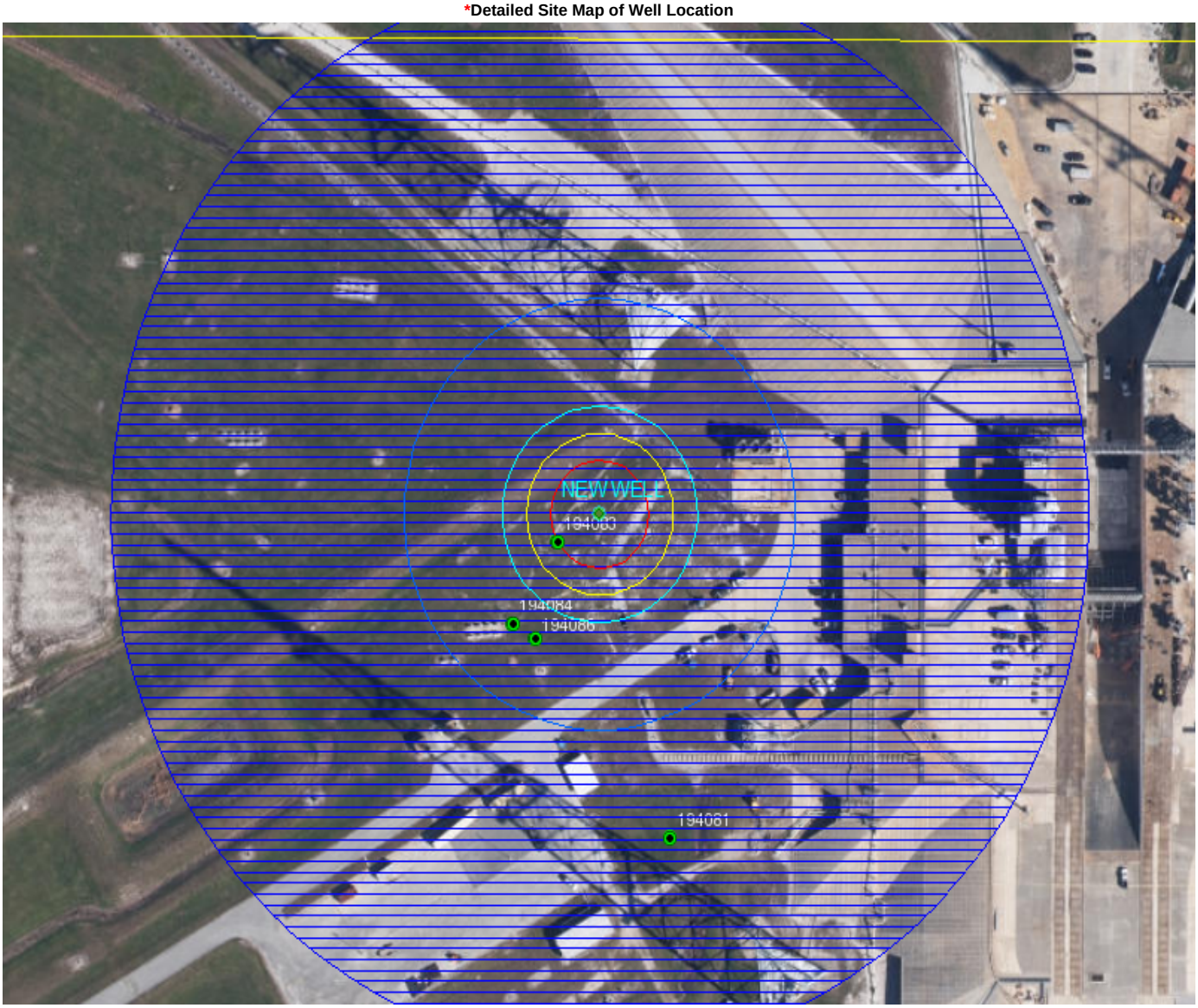
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest
[ ] Northwest
[ ] St. Johns River
[ ] South Florida
[ ] Suwannee River
[ ] DEP
[X] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793337

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194083-1 *CUP/WUP Number _____ *DID Number 535626 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0186

6. Space Launch Complex 39 B, Kennedy Space Center , FL 32781
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E

8. Latitude 283737.7038 Longitude 803722.1995

9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction

11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage

Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____

____Other (Describe) Air Sparge well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____

13. *Measured Static Water Level 1.86 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM

14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No

15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____

16. *Total Well Depth 58.4 ft. Cased Depth 56.4 ft. *Open Hole: From ____To____ft. *Screen: From 56.4 To 58.4ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft. To 58.4 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

18. *Surface Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

19. *Primary Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

20. *Liner Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

21. *Telescope Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):

____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):

Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:

*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com

*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194083-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

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4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

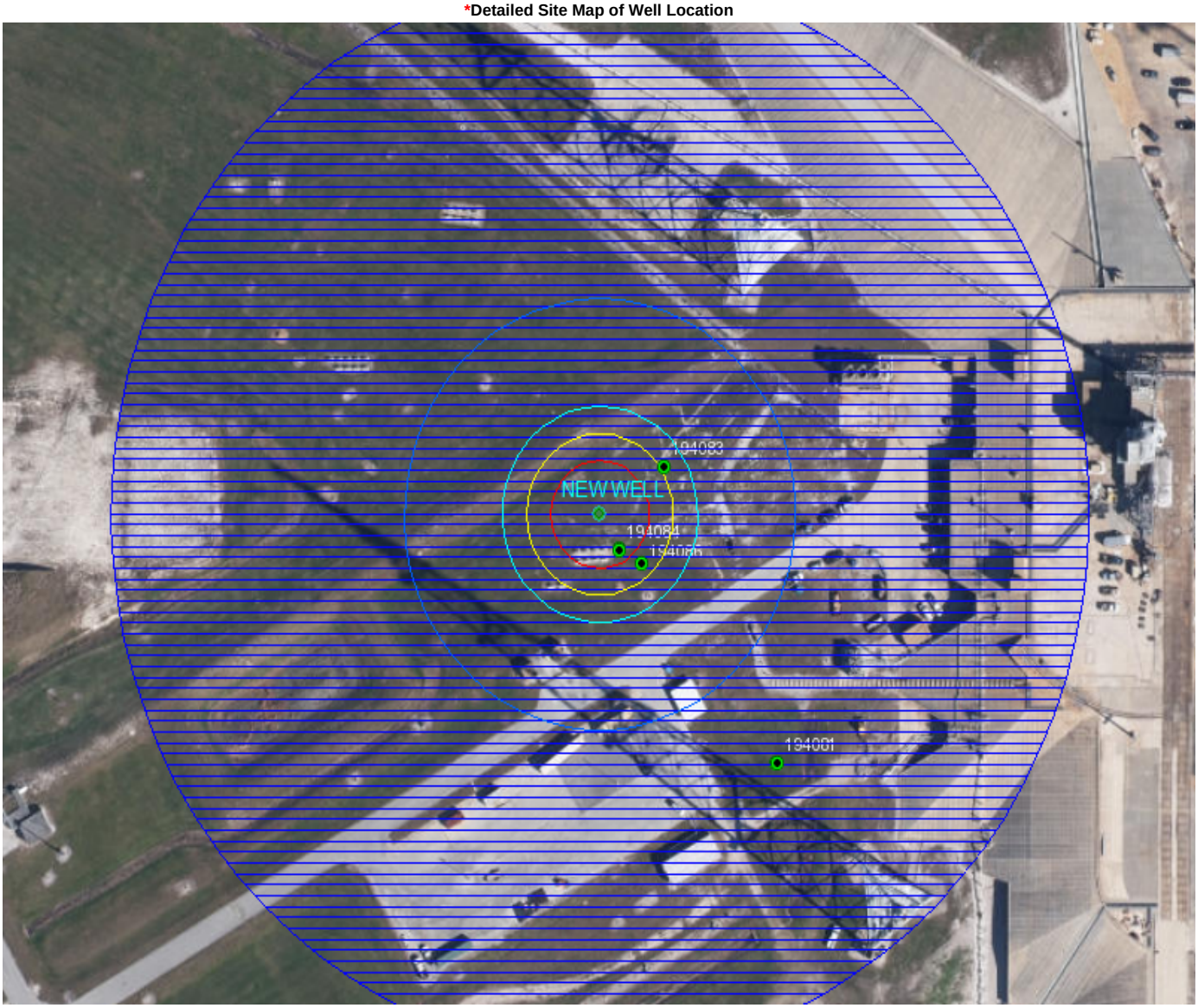
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793340

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194083-1 *CUP/WUP Number _____ *DID Number 535628 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0187
6. Space Launch Complex 39 B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283737.8945 Longitude 803721.9195
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) Air Sparge well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 1.92 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 57.2 ft. Cased Depth 55.2 ft. *Open Hole: From ____To____ft. *Screen: From 55.2 To 57.2ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 57.2 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194083-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
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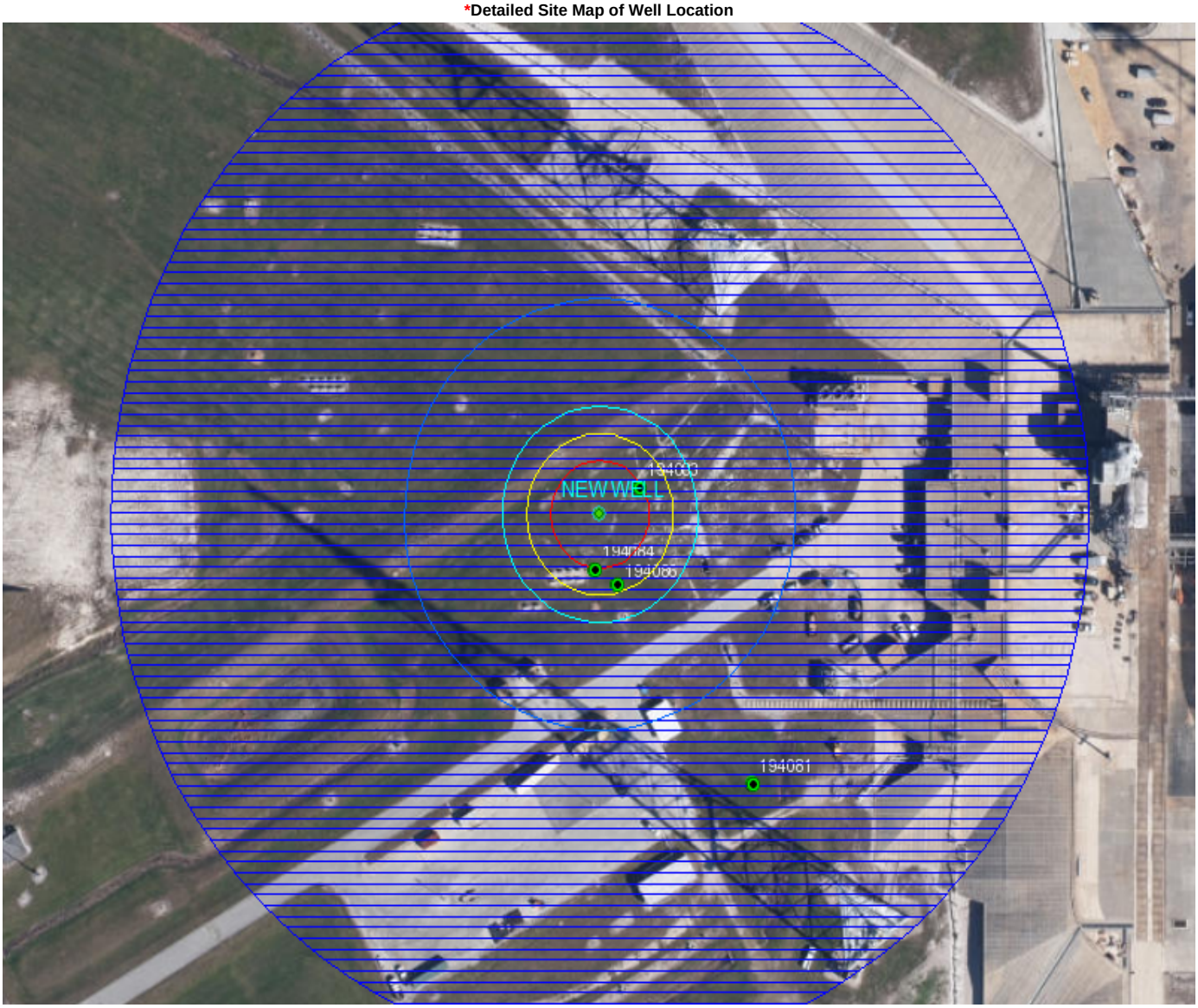
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9225 CR 49
LIVE OAK, FL 32060
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***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793343

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194083-1 *CUP/WUP Number _____ *DID Number 535629 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0191
6. Space Launch Complex 39 B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283737.4283 Longitude 803721.596
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) Air Sparge well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 2.6 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 58.8 ft. Cased Depth 56.8 ft. *Open Hole: From ____To____ft. *Screen: From 56.8 To 58.8ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 58.8 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194083-1

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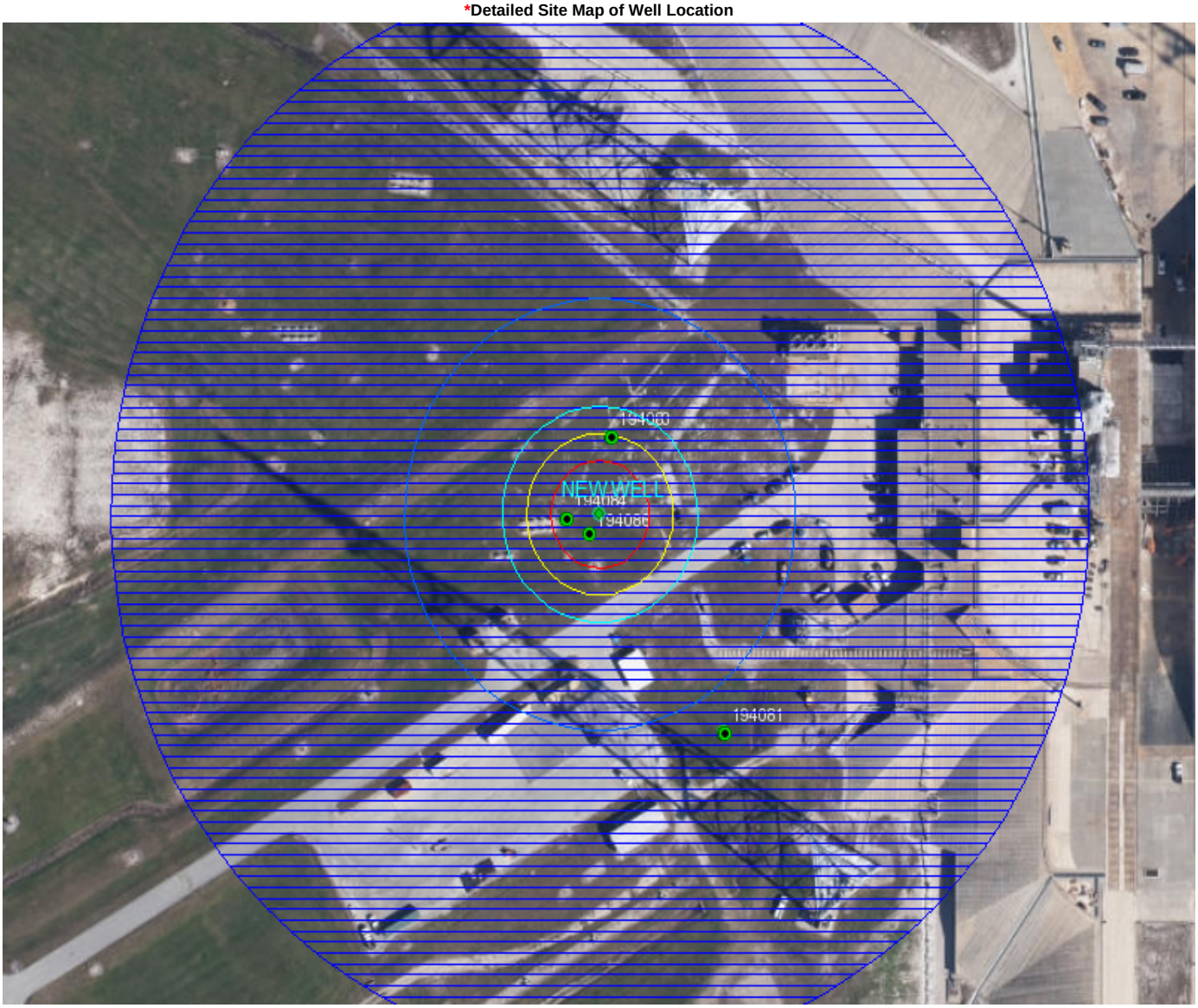
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***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793350

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194083-1 *CUP/WUP Number _____ *DID Number 535630 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0196
6. Space Launch Complex 39 B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283737.013 Longitude 803721.9678
9. Data Obtained From: ___GPS __X__Map ___Survey Datum: ___NAD 27 __X__NAD 83 ___WGS 84

10. *Type of Work: ___Construction ___Repair ___Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
Golf Course Irrigation
___Site Investigation
___Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge __X__Other (Describe) _____
___Other (Describe) Air Sparge well abandonment

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted ___Sonic
    ___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____
13. *Measured Static Water Level 1.63 ft. Measured Pumping Water Level ___ft. After ___Hours at ___GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ___Above __X__Below Land Surface *Flowing: ___Yes __X__No
15. *Casing Material: ___Black Steel ___Galvanized __X__PVC ___Stainless Steel ___Not Cased ___Other _____
16. *Total Well Depth 58.25 ft. Cased Depth 56.25 ft. *Open Hole: From ___To___ft. *Screen: From 56.25 To 58.2 5 ft. Slot Size .01

17. *Abandonment: Other(Explain) _____

From 0 ft.	To 58.25 ft.	No. of Bags 1	Seal Material (Check One):	___Neat Cement	___Bentonite	X	Other Neat/Portland Cement	
From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___	Other___	
From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___	Other___	
From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___	Other___	
From ___ft.	To ___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___	Other___	

18. *Surface Casing Diameter and Depth:

Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	

19. *Primary Casing Diameter and Depth:

Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	

20. *Liner Casing Diameter and Depth:

Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	

21. *Telescope Casing Diameter and Depth:

Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	
Dia ___in.	From ___ft.	To___ft.	No. of Bags___	Seal Material (Check One):	___Neat Cement	___Bentonite	___Other	

22. Pump Type (If known):
___Centrifugal ___Jet ___Submersible ___Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ___ft. Intake Depth ___ft.

23. Chemical Analysis (When Required):
Iron ___ppm Sulfate ___ppm Chloride ___ppm
___Laboratory Test ___Field Test Kit

24. Water Well Contractor:
*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194083-1

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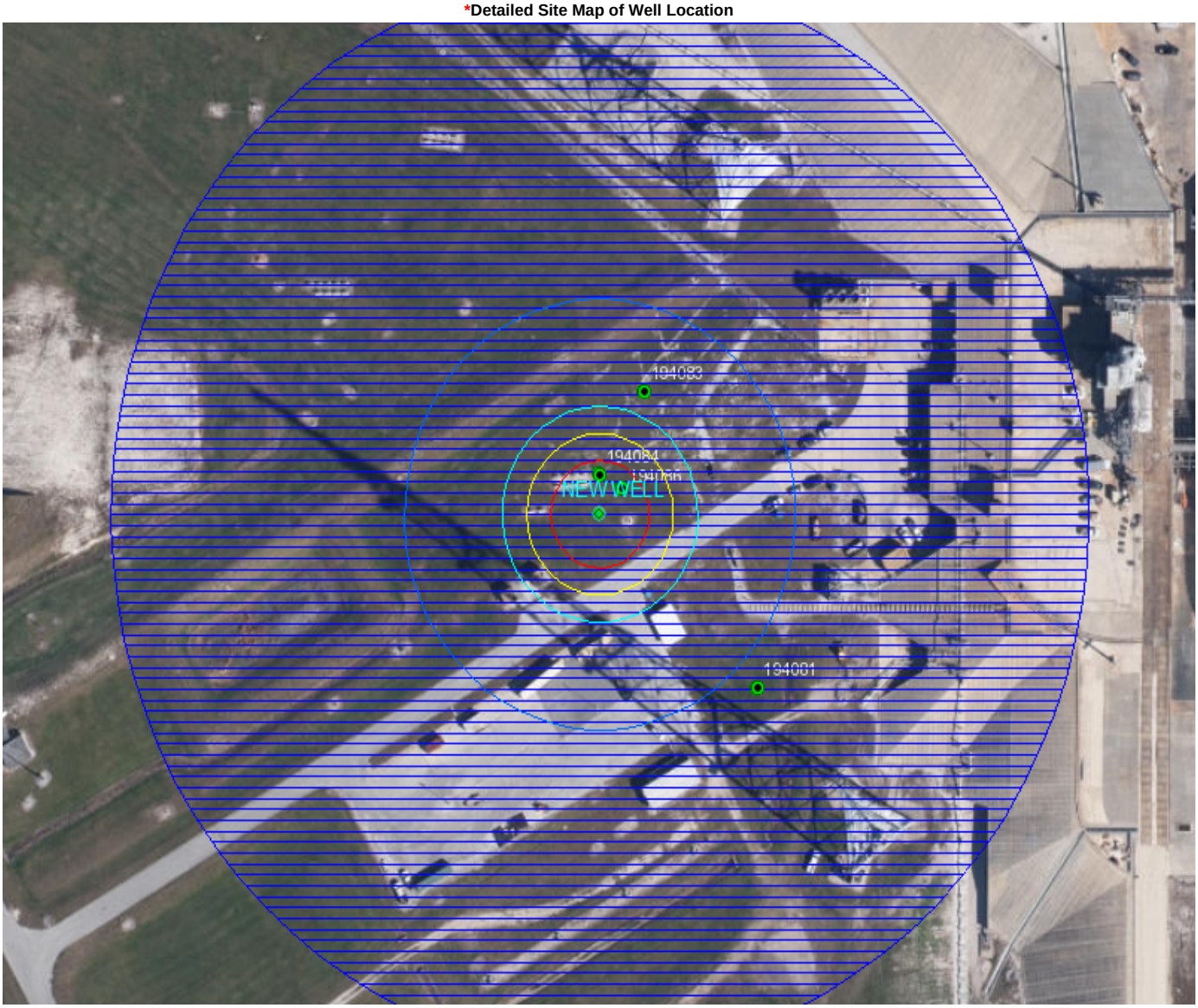
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***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

***Detailed Site Map of Well Location**



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793352

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194083-1 *CUP/WUP Number _____ *DID Number 535631 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW0197
6. Space Launch Complex 39 B, Kennedy Space Center , FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283737.2122 Longitude 803722.0547
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

- ____Domestic
- ____Bottled Water Supply
- ____Public Water Supply (Limited Use/DOH)
- ____Public Water Supply (Community or Non-Community/DEP)
- ____Class I Injection
- ____Landscape Irrigation
- ____Recreation Area Irrigation
- ____Agricultural Irrigation
- ____Livestock
- ____Nursery Irrigation
- ____Commercial/Industrial Golf Course Irrigation
- ____Site Investigation
- ____Monitoring
- ____Test
- ____Earth-Coupled Geothermal
- ____HVAC Supply
- ____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) Air Sparge well abandonment

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 1 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 58.95 ft. Cased Depth 56.95 ft. *Open Hole: From ____To____ft. *Screen: From 56.95 To 58.5 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
- From 0 ft. To 58.95 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
- From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

18. *Surface Casing Diameter and Depth:
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

19. *Primary Casing Diameter and Depth:
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

20. *Liner Casing Diameter and Depth:
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

21. *Telescope Casing Diameter and Depth:
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
- Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):
Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:
*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194083-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

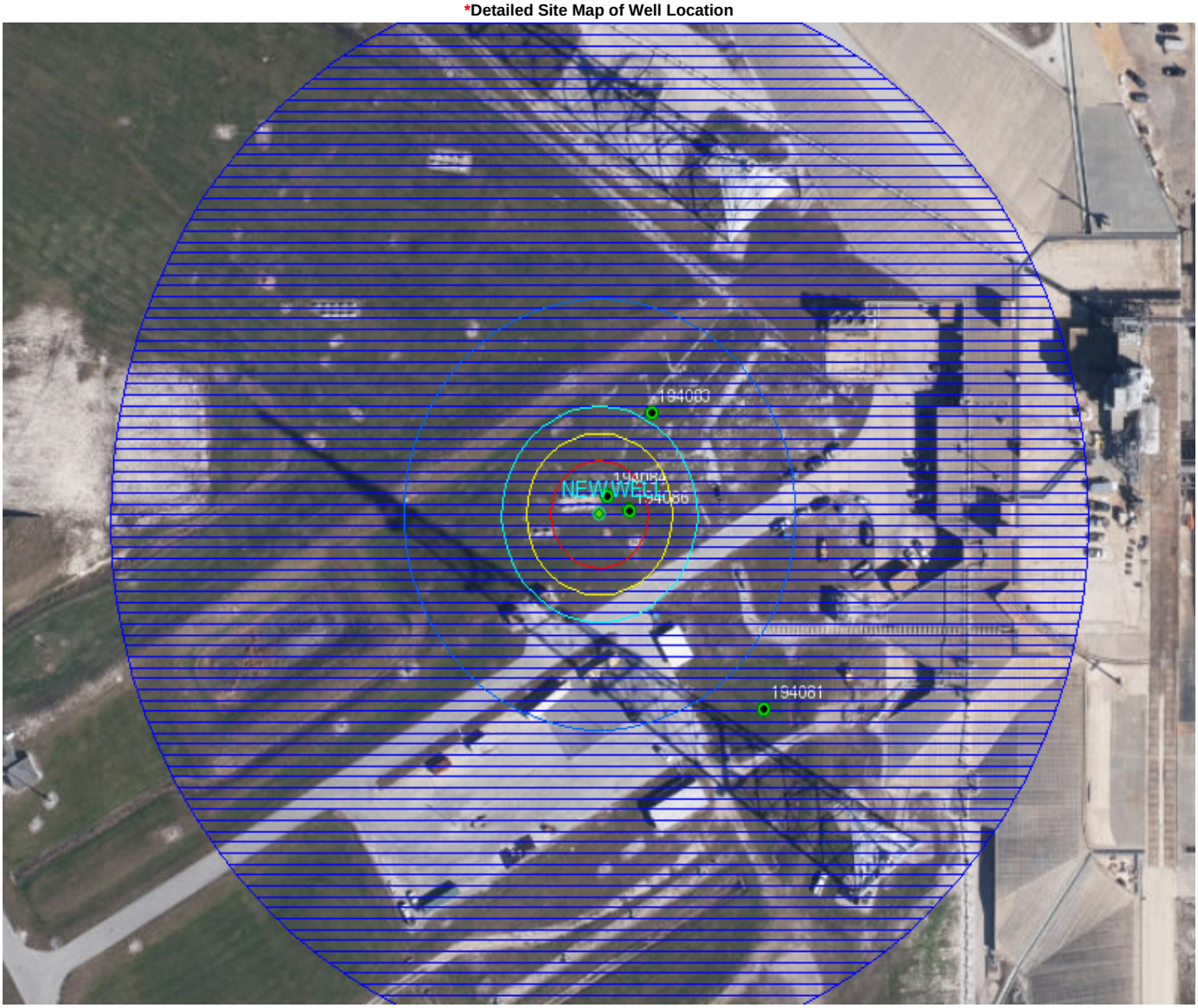
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

***Detailed Site Map of Well Location**



STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest
[ ] Northwest
[ ] St. Johns River
[ ] South Florida
[ ] Suwannee River
[ ] DEP
[X] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793318

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194084-1 *CUP/WUP Number _____ *DID Number 534752 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 11/30/2022 5. Florida Unique ID _____

6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E

8. Latitude 283738.1409 Longitude 803721.6462

9. Data Obtained From: ____GPS [X] Map ____Survey Datum: ____NAD 27 [X] NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification [X] Abandonment Reason: Wells in area of new construction

11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage

Remediation: ____Recovery ____Air Sparge [X] Other (Describe) _____

____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____

13. *Measured Static Water Level 2.25 ft. Measured Pumping Water Level ____ft. After ____Hours at ____GPM

14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above [X] Below Land Surface *Flowing: ____Yes [X] No

15. *Casing Material: ____Black Steel ____Galvanized [X] PVC ____Stainless Steel ____Not Cased ____Other _____

16. *Total Well Depth 58.75 ft. Cased Depth 56.75 ft. *Open Hole: From ____To____ft. *Screen: From 56.75 To 58.5 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft. To 58.75 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

18. *Surface Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

19. *Primary Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

20. *Liner Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

21. *Telescope Casing Diameter and Depth:

Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):

____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):

Iron ____ppm Sulfate ____ppm Chloride ____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:

*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com

*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194084-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

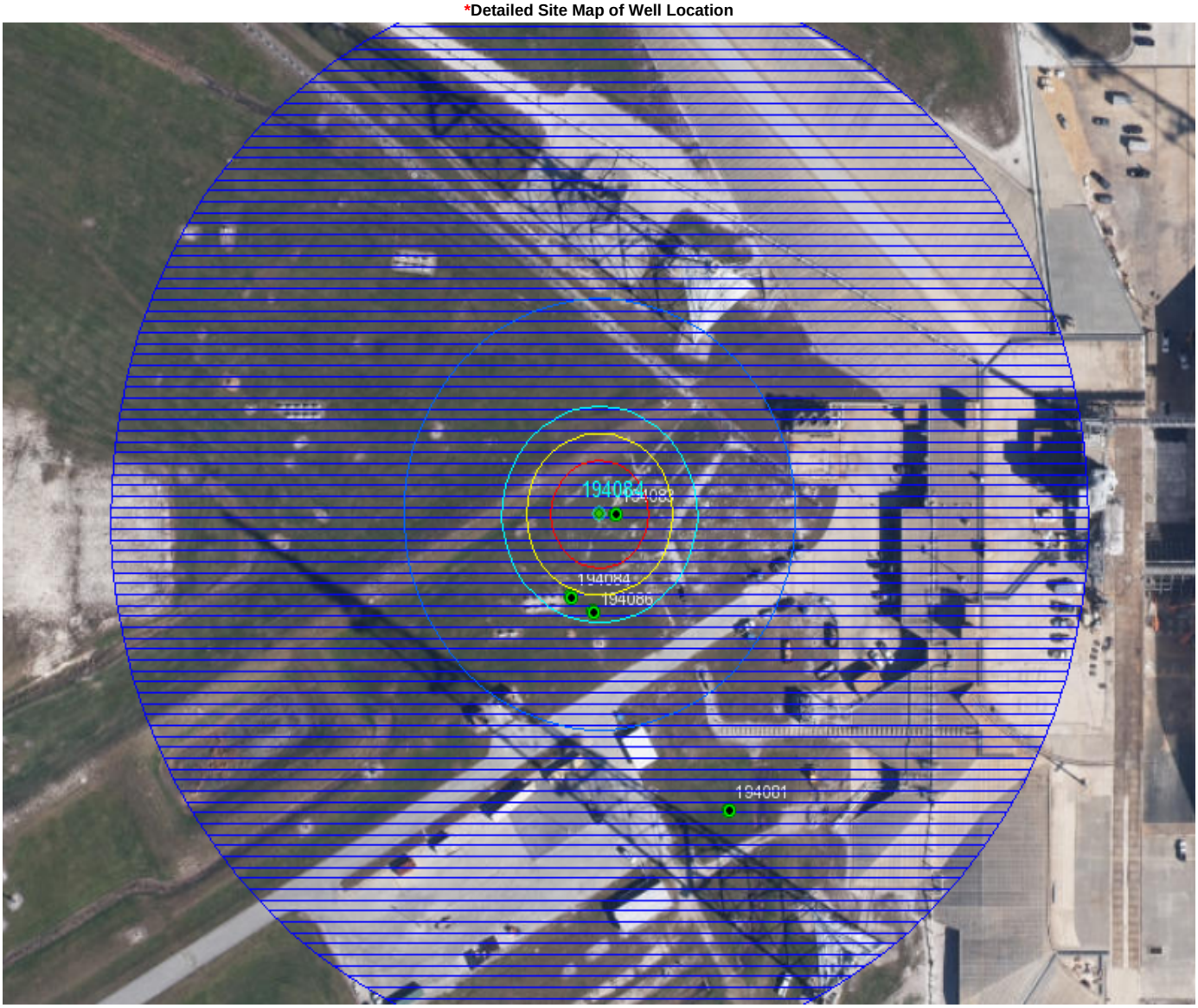
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793320

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194084-1 *CUP/WUP Number _____ *DID Number 535616 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 11/30/2022 5. Florida Unique ID ASW169
6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283738.4799 Longitude 803721.5158
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level ____.4____ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 57.58 ft. Cased Depth 55.58 ft. *Open Hole: From ____To____ft. *Screen: From 55.58 To 57.58 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 57.58 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron _____ppm Sulfate _____ppm Chloride _____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194084-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

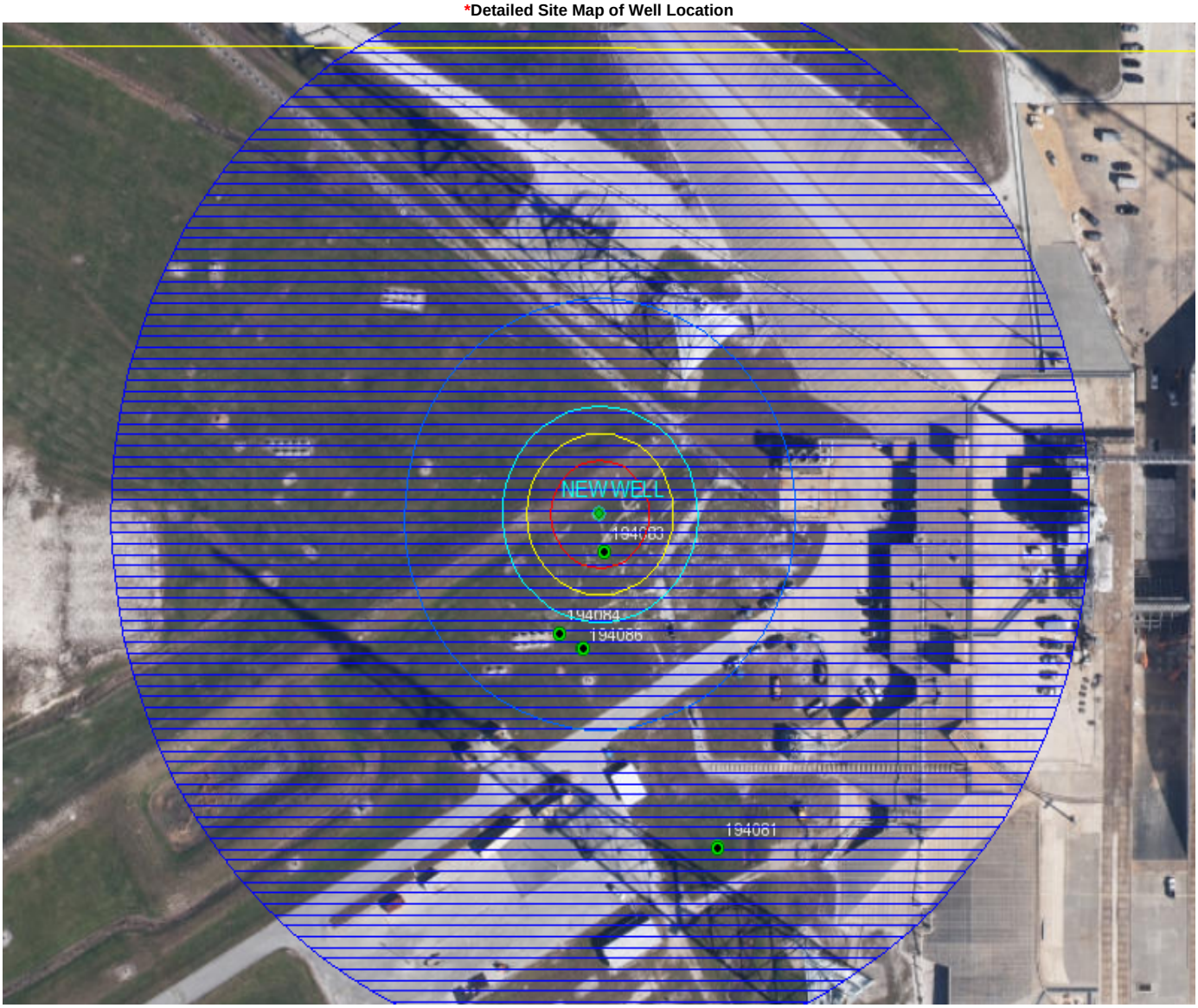
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793321

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194084-1 *CUP/WUP Number _____ *DID Number 535617 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 11/30/2022 5. Florida Unique ID ASW170
6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283738.6579 Longitude 803721.2696
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84
10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 2.55 ft. Measured Pumping Water Level ____ft. After ____Hours at ____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 56.3 ft. Cased Depth 54.3 ft. *Open Hole: From ____To____ft. *Screen: From 54.3 To 56.3ft. Slot Size .01
17. *Abandonment: Other(Explain _____)
    From 0 ft. To 56.3 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron ____ppm Sulfate ____ppm Chloride ____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194084-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

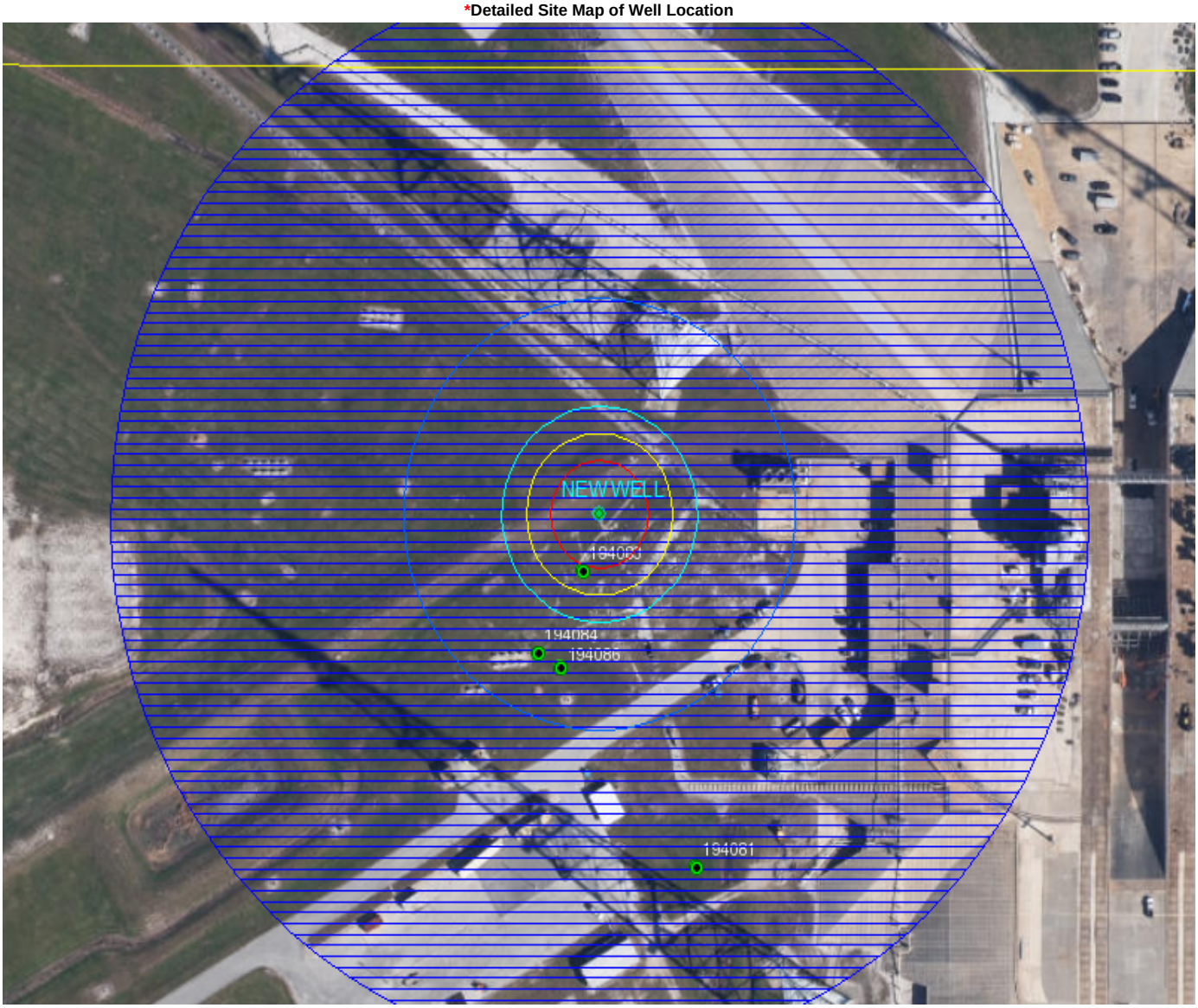
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793322

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194084-1 *CUP/WUP Number _____ *DID Number 535618 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW174
6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283737.9375 Longitude 803721.7476
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 1.75 ft. Measured Pumping Water Level ____ft. After ____Hours at ____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 58.35 ft. Cased Depth 56.35 ft. *Open Hole: From ____To____ft. *Screen: From 56.35 To 58.35 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 58.35 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron ____ppm Sulfate ____ppm Chloride ____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194084-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

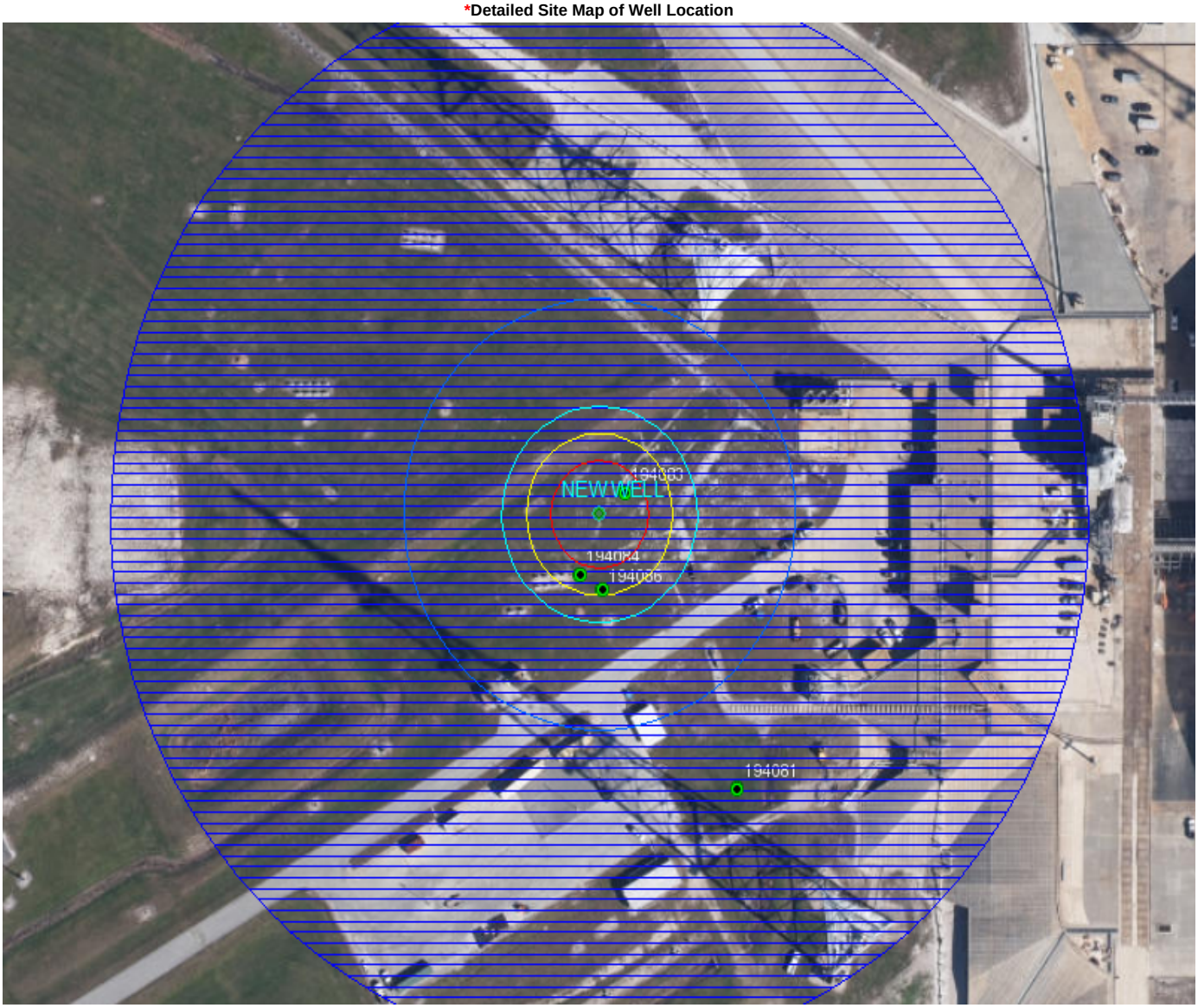
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793323

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194084-1 *CUP/WUP Number _____ *DID Number 535619 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW175
6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283738.0053 Longitude 803721.5979
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 1.4 ft. Measured Pumping Water Level ____ft. After ____Hours at ____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 58.95 ft. Cased Depth 56.95 ft. *Open Hole: From ____To____ft. *Screen: From 56.95 To 58.5 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 58.95 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron ____ppm Sulfate ____ppm Chloride ____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194084-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

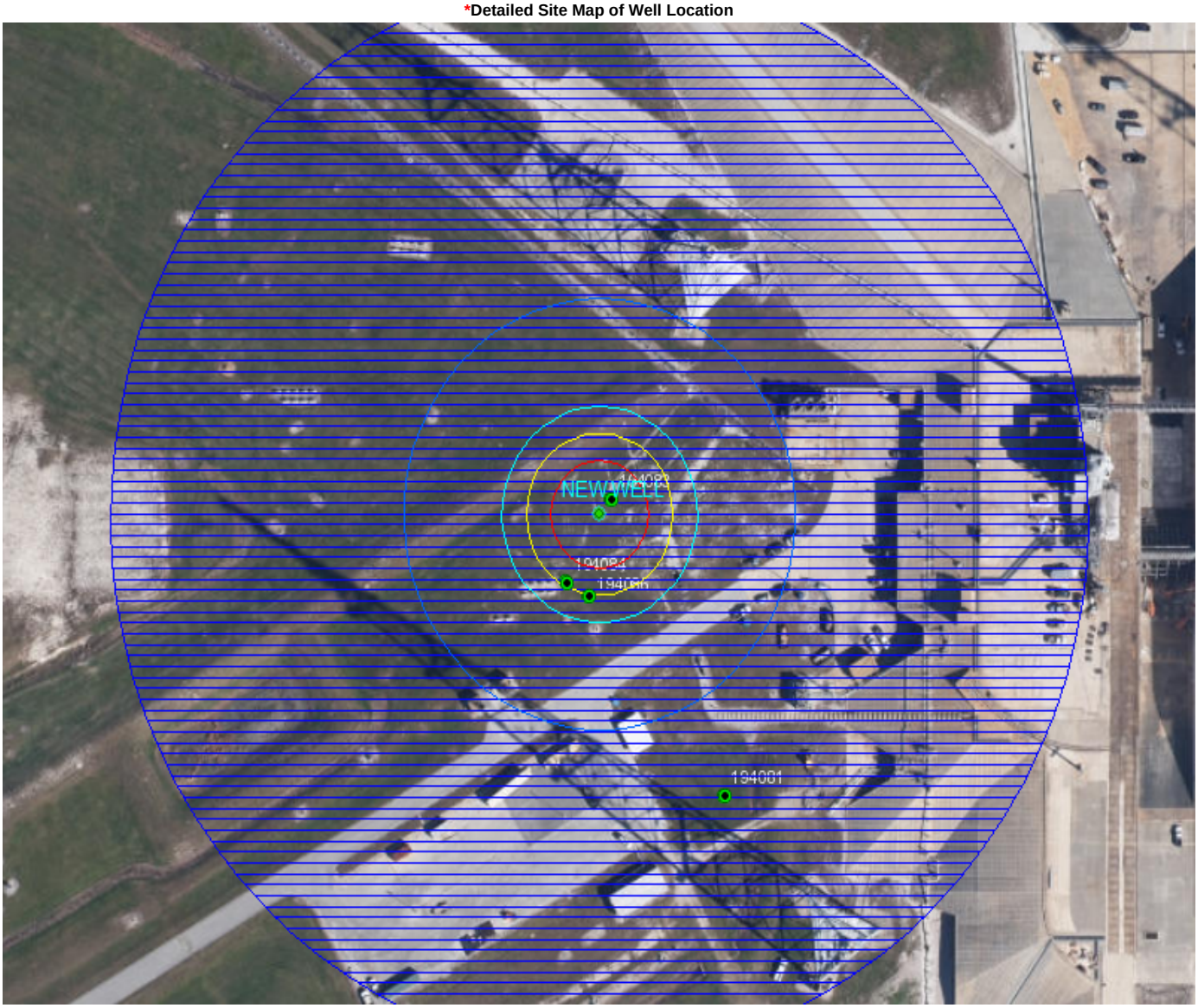
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

***Detailed Site Map of Well Location**



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793324

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194084-1 *CUP/WUP Number _____ *DID Number 535620 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ASW176
6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283738.2299 Longitude 803721.3275
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 0 ft. Measured Pumping Water Level ____ft. After ____Hours at ____GPM
14. *Measuring Point (Describe) T.O.C. Which is 1.5 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 57.8 ft. Cased Depth 55.8 ft. *Open Hole: From ____To____ft. *Screen: From 55.8 To 57.8ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 57.8 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron ____ppm Sulfate ____ppm Chloride ____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194084-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

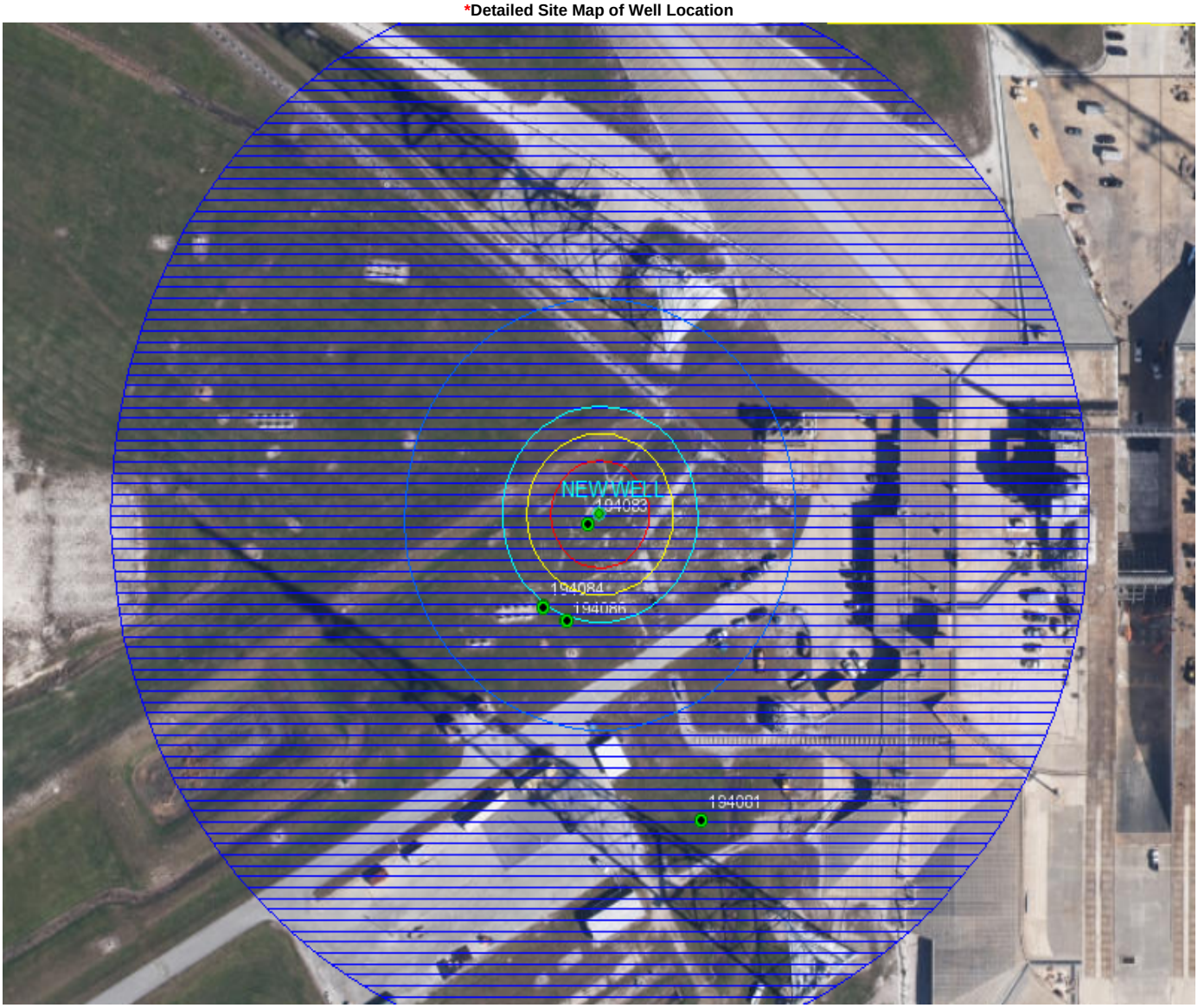
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793325

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194084-1 *CUP/WUP Number _____ *DID Number 535621 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID ECSIW0002SI
6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283737.4586 Longitude 803721.3275
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 1.65 ft. Measured Pumping Water Level ____ft. After ____Hours at ____GPM
14. *Measuring Point (Describe) T.O.C. Which is .3 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 15.85 ft. Cased Depth 5.85 ft. *Open Hole: From ____To____ft. *Screen: From 5.8 5 To 15.8 5 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 15.85 ft. No. of Bags .5 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron ____ppm Sulfate ____ppm Chloride ____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194084-1

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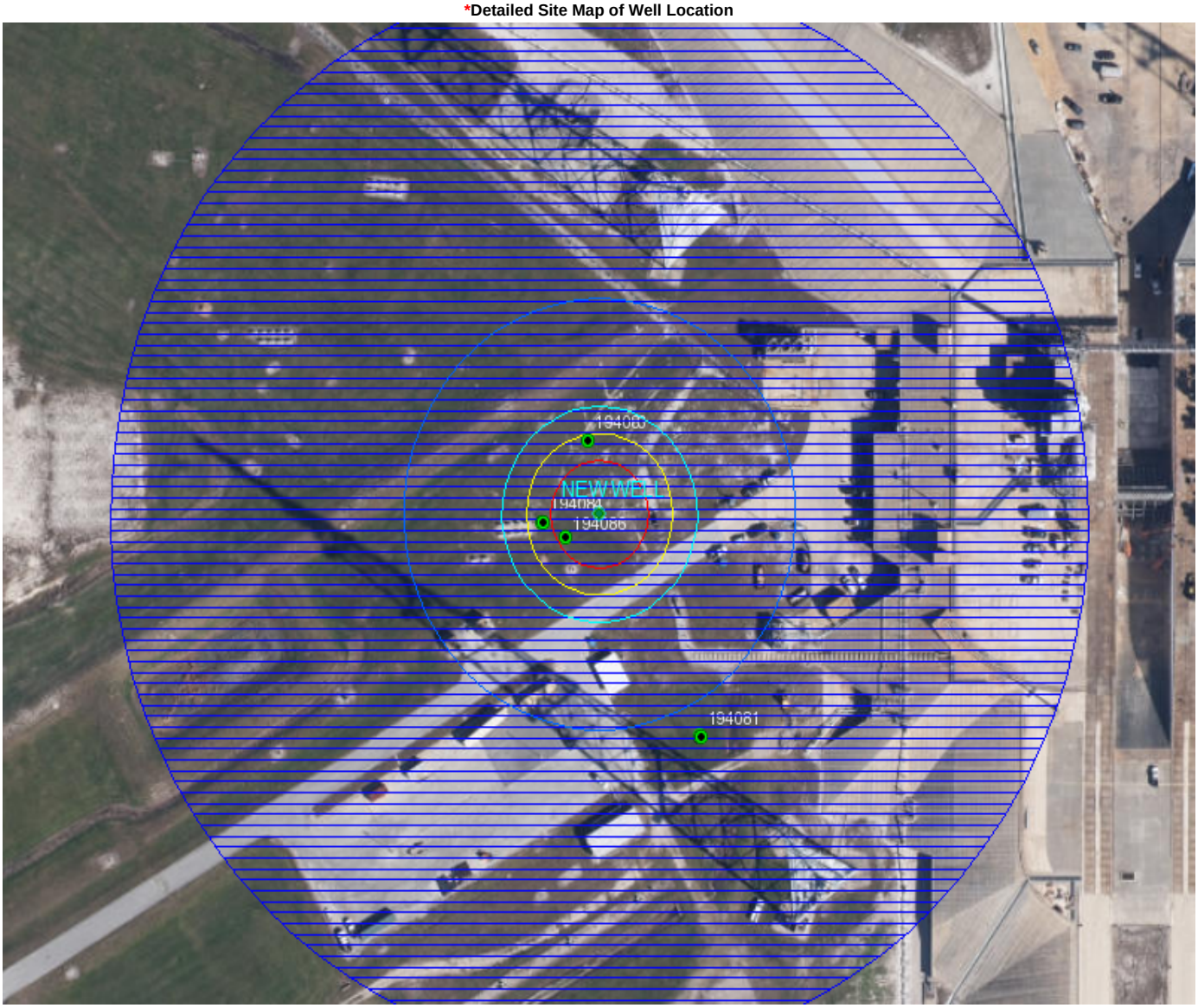
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793327

Date:12/05/2022

Official Use Only

1. *Permit Number REM-194084-1 *CUP/WUP Number _____ *DID Number 535622 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 8 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 12/01/2022 5. Florida Unique ID Damagedwell
6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283738.7045 Longitude 803720.8833
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
____Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge __X__Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 1.15 ft. Measured Pumping Water Level ____ft. After ____Hours at ____GPM
14. *Measuring Point (Describe) T.O.C. Which is .3 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 43.5 ft. Cased Depth 38.5 ft. *Open Hole: From ____To____ft. *Screen: From 38.5 To 43.5ft. Slot Size .01

17. *Abandonment: Other(Explain ____) _____
    From 0 ft. To 43.5 ft. No. of Bags 1 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
18. *Surface Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
19. *Primary Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
20. *Liner Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
21. *Telescope Casing Diameter and Depth:
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____
    Dia ____in. From ____ft. To____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other _____

22. Pump Type (If known):
    ____Centrifugal ____Jet ____Submersible ____Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ____ft. Intake Depth ____ft.
23. Chemical Analysis (When Required):
    Iron ____ppm Sulfate ____ppm Chloride ____ppm
    ____Laboratory Test ____Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. REM-194084-1

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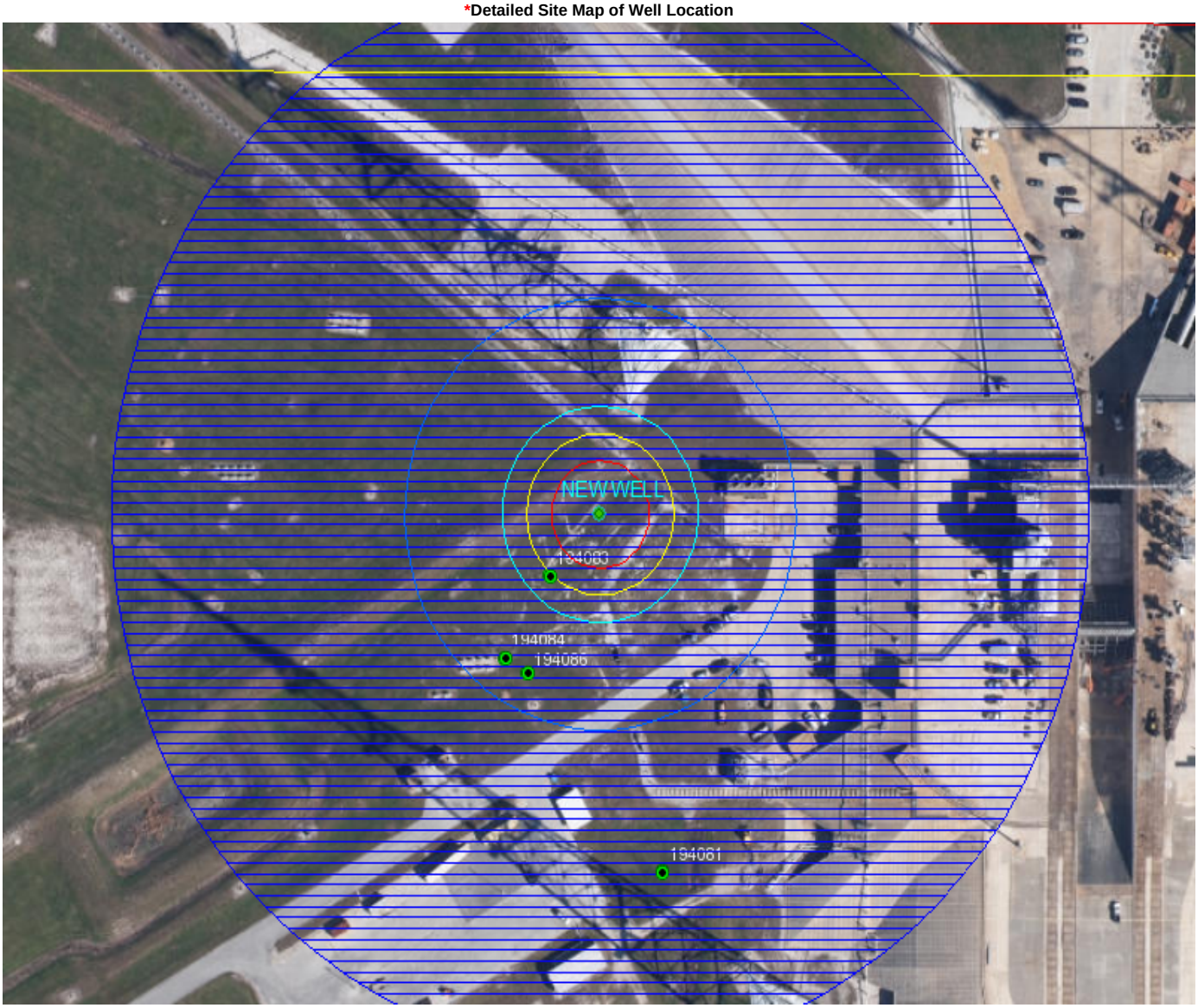
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WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____
From	_____	ft.	To	_____	ft.	Color	_____	Grain Size (F, M, C)	_____	Material	_____

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest
[ ] Northwest
[ ] St. Johns River
[ ] South Florida
[ ] Suwannee River
[ ] DEP
[X] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793305

Date:12/05/2022

Official Use Only

1. *Permit Number MW-194086-1 *CUP/WUP Number _____ *DID Number 534753 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 5 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 11/30/2022 5. Florida Unique ID MW0010
6. SWMU 009, NASA KSC, FL 32899
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283737.2274 Longitude 803721.7065
9. Data Obtained From: ___GPS [X] Map ___Survey Datum: ___NAD 27 [X] NAD 83 ___WGS 84

10. *Type of Work: ___Construction ___Repair ___Modification [X] Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
Golf Course Irrigation
___Site Investigation
[X] Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage
Remediation: ___Recovery ___Air Sparge ___Other (Describe) _____
___Other (Describe) _____

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted ___Sonic
    ___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____
13. *Measured Static Water Level 2.15 ft. Measured Pumping Water Level ___ft. After ___Hours at ___GPM
14. *Measuring Point (Describe) TOC Which is .3 ft. ___Above [X] Below Land Surface *Flowing: ___Yes [X] No
15. *Casing Material: ___Black Steel ___Galvanized [X] PVC ___Stainless Steel ___Not Cased ___Other _____
16. *Total Well Depth 31 ft. Cased Depth ___ft. *Open Hole: From ___To ___ft. *Screen: From 26 To 31 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)
    From 0 ft. To 31 ft. No. of Bags .5 Seal Material (Check One): ___Neat Cement ___Bentonite X Other Neat/Portland Cement
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
18. *Surface Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
19. *Primary Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
20. *Liner Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
21. *Telescope Casing Diameter and Depth:
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
    Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___

22. Pump Type (If known):
    ___Centrifugal ___Jet ___Submersible ___Turbine
    Horsepower _____ Pump Capacity (GPM) _____
    Pump Depth ___ft. Intake Depth ___ft.
23. Chemical Analysis (When Required):
    Iron ___ppm Sulfate ___ppm Chloride ___ppm
    ___Laboratory Test ___Field Test Kit
24. Water Well Contractor:
    *Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
    *Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. MW-194086-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

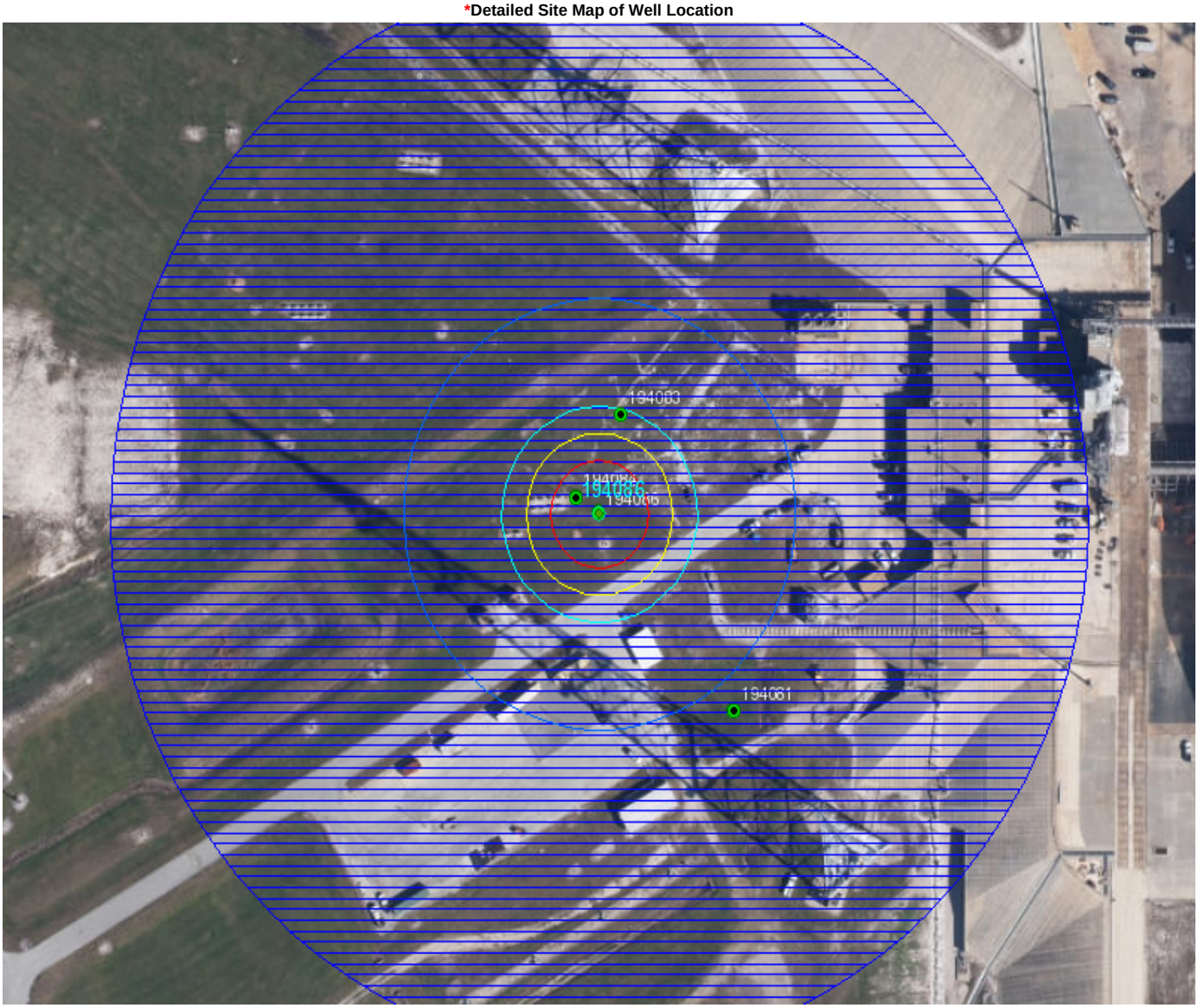
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest
[ ] Northwest
[ ] St. Johns River
[ ] South Florida
[ ] Suwannee River
[ ] DEP
[X] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793308

Date:12/05/2022

Official Use Only

1. *Permit Number MW-194086-1 *CUP/WUP Number _____ *DID Number 535612 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 5 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 11/30/2022 5. Florida Unique ID MW0016

6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E

8. Latitude 283738.147 Longitude 803721.4554

9. Data Obtained From: ___GPS ___X___Map ___Survey Datum: ___NAD 27 ___X___NAD 83 ___WGS 84

10. *Type of Work: ___Construction ___Repair ___Modification ___X___Abandonment Reason: Wells in area of new construction

11. *Specify Intended Use(s) of Well(s):

___Domestic
___Bottled Water Supply
___Public Water Supply (Limited Use/DOH)
___Public Water Supply (Community or Non-Community/DEP)
___Class I Injection
___Landscape Irrigation
___Recreation Area Irrigation
___Agricultural Irrigation
___Livestock
___Nursery Irrigation
___Commercial/Industrial
Golf Course Irrigation
___Site Investigation
___X___Monitoring
___Test
___Earth-Coupled Geothermal
___HVAC Supply
___HVAC Return

Class V Injection: ___Recharge ___Commercial/Industrial Disposal ___Aquifer Storage and Recovery ___Drainage

Remediation: ___Recovery ___Air Sparge ___Other (Describe) _____

___Other (Describe) _____

12. *Drill Method: ___Auger ___Cable Tool ___Rotary ___Combination (Two or More Methods) ___Jetted ___Sonic
___Horizontal Drilling ___Hydraulic Point (Direct Push) ___Other _____

13. *Measured Static Water Level 1.16 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM

14. *Measuring Point (Describe) TOC Which is .3 ft. ___Above ___X___Below Land Surface *Flowing: ___Yes ___X___No

15. *Casing Material: ___Black Steel ___Galvanized ___X___PVC ___Stainless Steel ___Not Cased ___Other _____

16. *Total Well Depth 30 ft. Cased Depth ___ft. *Open Hole: From ___To ___ft. *Screen: From 25 To 30 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft. To 30 ft. No. of Bags .5 Seal Material (Check One): ___Neat Cement ___Bentonite X Other Neat/Portland Cement
From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___

18. *Surface Casing Diameter and Depth:

Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___

19. *Primary Casing Diameter and Depth:

Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___

20. *Liner Casing Diameter and Depth:

Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___

21. *Telescope Casing Diameter and Depth:

Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___
Dia ___in. From ___ft. To ___ft. No. of Bags___ Seal Material (Check One): ___Neat Cement ___Bentonite ___Other___

22. Pump Type (If known):

___Centrifugal ___Jet ___Submersible ___Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ___ft. Intake Depth ___ft.

23. Chemical Analysis (When Required):

Iron _____ppm Sulfate _____ppm Chloride _____ppm
___Laboratory Test ___Field Test Kit

24. Water Well Contractor:

*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com

*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. MW-194086-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

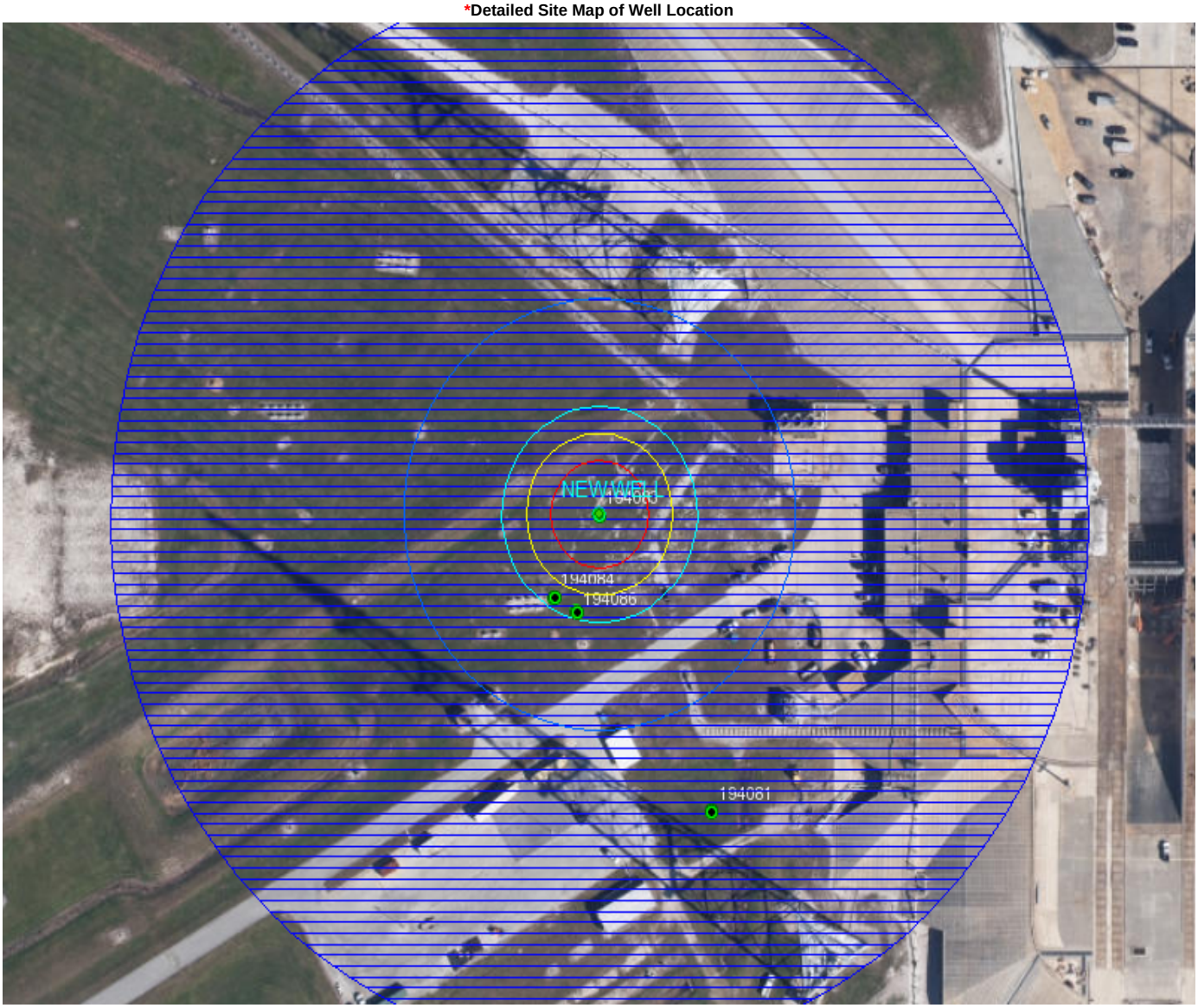
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
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***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

***Detailed Site Map of Well Location**



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793313

Date:12/05/2022

Official Use Only

1. *Permit Number MW-194086-1 *CUP/WUP Number _____ *DID Number 535613 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 5 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 11/30/2022 5. Florida Unique ID MW0017
6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283738.147 Longitude 803721.3395
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

- ____Domestic
- ____Bottled Water Supply
- ____Public Water Supply (Limited Use/DOH)
- ____Public Water Supply (Community or Non-Community/DEP)
- ____Class I Injection
- ____Landscape Irrigation
- ____Recreation Area Irrigation
- ____Agricultural Irrigation
- ____Livestock
- ____Nursery Irrigation
- ____Commercial/Industrial
- Golf Course Irrigation
- ____Site Investigation
- __X__Monitoring
- ____Test
- ____Earth-Coupled Geothermal
- ____HVAC Supply
- ____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge ____Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 1.19 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) TOC Which is .3 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 40 ft. Cased Depth 35 ft. *Open Hole: From ____To ____ft. *Screen: From 35 To 40 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft.	To 40 ft.	No. of Bags .5	Seal Material (Check One):	____Neat Cement	____Bentonite	X	Other	Neat/Portland Cement
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other	____
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other	____
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other	____
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other	____

18. *Surface Casing Diameter and Depth:

Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____

19. *Primary Casing Diameter and Depth:

Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____

20. *Liner Casing Diameter and Depth:

Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____

21. *Telescope Casing Diameter and Depth:

Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____

22. Pump Type (If known):
____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):
Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:
*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. MW-194086-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

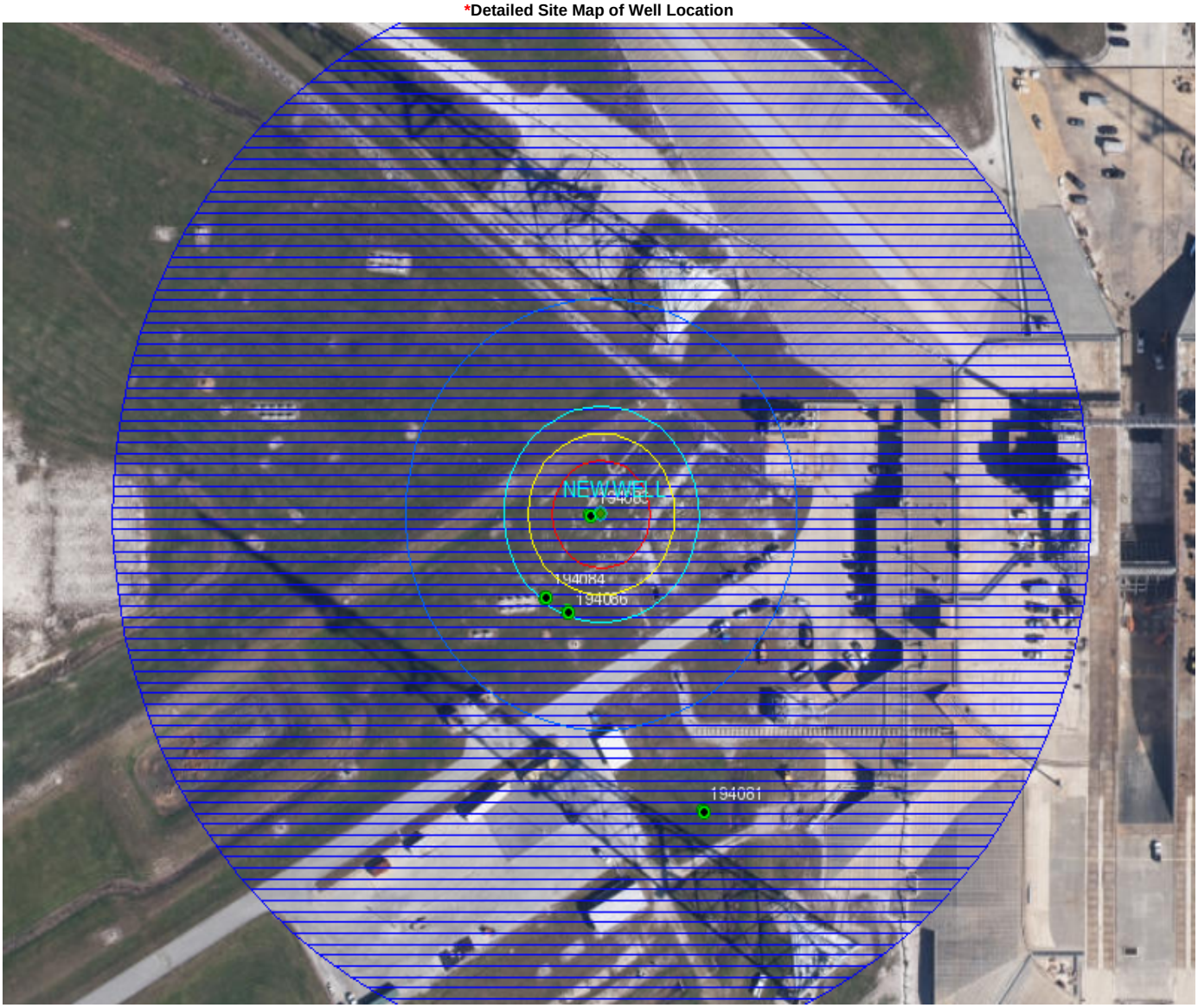
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

[ ] Southwest
[ ] Northwest
[ ] St. Johns River
[ ] South Florida
[ ] Suwannee River
[ ] DEP
[X] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793315

Date:12/05/2022

Official Use Only

1. *Permit Number MW-194086-1 *CUP/WUP Number _____ *DID Number 535614 62-524 Delineation No. _____

2. *Number of permitted wells constructed, repaired, or abandoned 5 *Number of permitted wells not constructed, repaired, or abandoned 0

3. *Owner's Name United States Of America 4.*Completion Date 11/30/2022 5. Florida Unique ID HVACIW002S

6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
*Well Location – Address, Road Name or Number, City, ZIP

7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E

8. Latitude 283735.4263 Longitude 803720.1615

9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction

11. *Specify Intended Use(s) of Well(s):

____Domestic
____Bottled Water Supply
____Public Water Supply (Limited Use/DOH)
____Public Water Supply (Community or Non-Community/DEP)
____Class I Injection
____Landscape Irrigation
____Recreation Area Irrigation
____Agricultural Irrigation
____Livestock
____Nursery Irrigation
____Commercial/Industrial
Golf Course Irrigation
____Site Investigation
__X__Monitoring
____Test
____Earth-Coupled Geothermal
____HVAC Supply
____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage

Remediation: ____Recovery ____Air Sparge ____Other (Describe) _____

____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____

13. *Measured Static Water Level 1.2 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM

14. *Measuring Point (Describe) TOC Which is .3 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No

15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____

16. *Total Well Depth 28 ft. Cased Depth 23 ft. *Open Hole: From ____To ____ft. *Screen: From 23 To 28 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft. To 28 ft. No. of Bags .75 Seal Material (Check One): ____Neat Cement ____Bentonite X Other Neat/Portland Cement
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

18. *Surface Casing Diameter and Depth:

Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

19. *Primary Casing Diameter and Depth:

Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

20. *Liner Casing Diameter and Depth:

Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

21. *Telescope Casing Diameter and Depth:

Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____
Dia ____in. From ____ft. To ____ft. No. of Bags____ Seal Material (Check One): ____Neat Cement ____Bentonite ____Other____

22. Pump Type (If known):
____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):
Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:

*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com

*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. MW-194086-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

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WWW.NWFWMD.STATE.FL.US

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P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

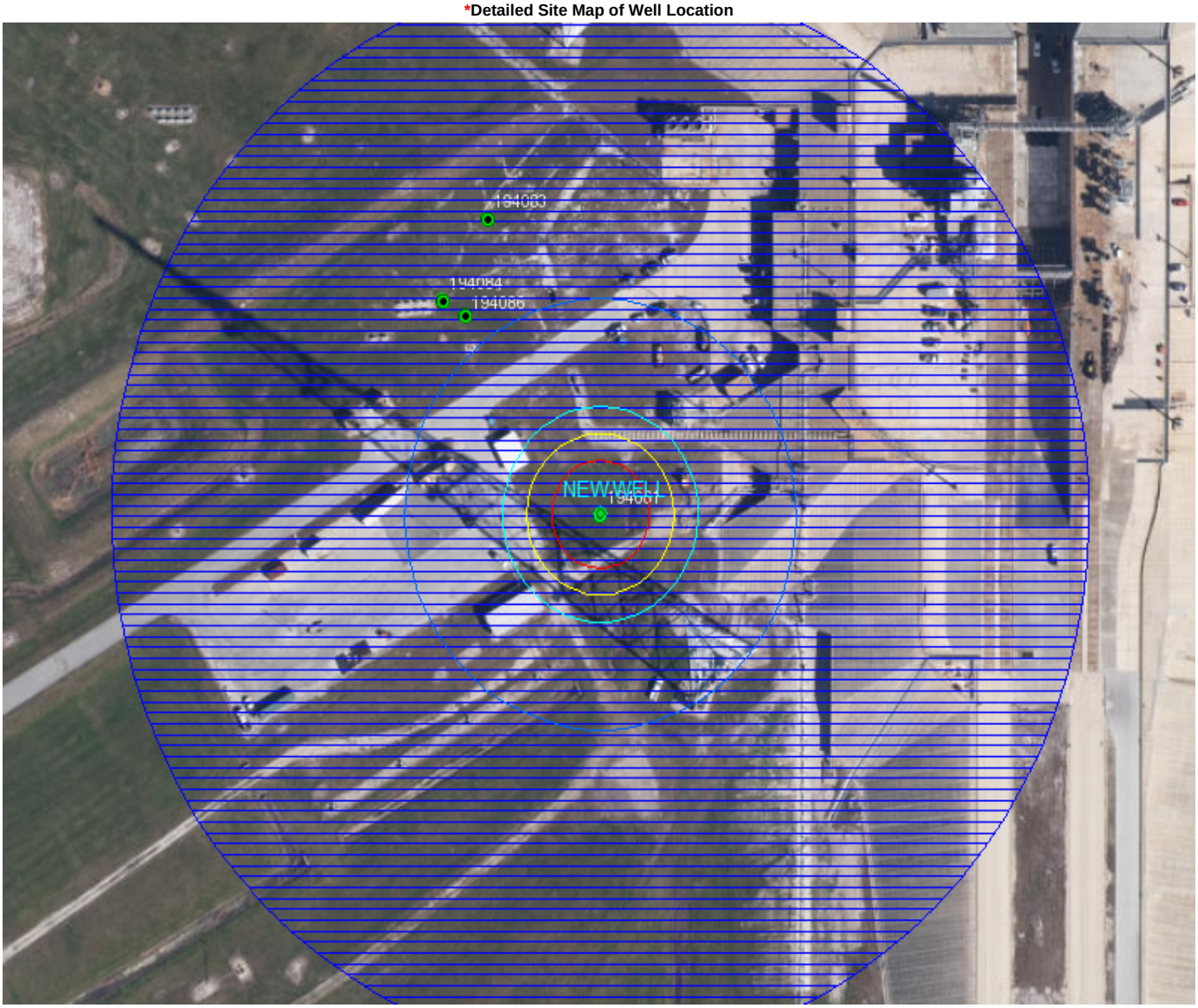
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

*Detailed Site Map of Well Location



STATE OF FLORIDA WELL COMPLETION REPORT

- [ ] Southwest
- [ ] Northwest
- [ ] St. Johns River
- [ ] South Florida
- [ ] Suwannee River
- [ ] DEP
- [x] Delegated Authority (If Applicable) **Brevard DOH**

PLEASE, FILL OUT ALL APPLICABLE FIELDS
(*Denotes Required Fields Where Applicable)

Date Stamp

Confirmation# 793317

Date:12/05/2022

Official Use Only

1. *Permit Number MW-194086-1 *CUP/WUP Number _____ *DID Number 535615 62-524 Delineation No. _____
2. *Number of permitted wells constructed, repaired, or abandoned 5 *Number of permitted wells not constructed, repaired, or abandoned 0
3. *Owner's Name United States Of America 4.*Completion Date 11/30/2022 5. Florida Unique ID HVACIW002I
6. Space Launch Complex 39 B, Kennedy Space Center, FL 32781
   *Well Location – Address, Road Name or Number, City, ZIP
7. *County Brevard *Section 33 Land Grant _____ *Township 21S *Range 37E
8. Latitude 283735.4051 Longitude 803720.1567
9. Data Obtained From: ____GPS __X__Map ____Survey Datum: ____NAD 27 __X__NAD 83 ____WGS 84

10. *Type of Work: ____Construction ____Repair ____Modification __X__Abandonment Reason: Wells in area of new construction
11. *Specify Intended Use(s) of Well(s):

- ____Domestic
- ____Bottled Water Supply
- ____Public Water Supply (Limited Use/DOH)
- ____Public Water Supply (Community or Non-Community/DEP)
- ____Class I Injection
- ____Landscape Irrigation
- ____Recreation Area Irrigation
- ____Agricultural Irrigation
- ____Livestock
- ____Nursery Irrigation
- ____Commercial/Industrial
- Golf Course Irrigation
- ____Site Investigation
- __X__Monitoring
- ____Test
- ____Earth-Coupled Geothermal
- ____HVAC Supply
- ____HVAC Return

Class V Injection: ____Recharge ____Commercial/Industrial Disposal ____Aquifer Storage and Recovery ____Drainage
Remediation: ____Recovery ____Air Sparge ____Other (Describe) _____
____Other (Describe) _____

12. *Drill Method: ____Auger ____Cable Tool ____Rotary ____Combination (Two or More Methods) ____Jetted ____Sonic
    ____Horizontal Drilling ____Hydraulic Point (Direct Push) ____Other _____
13. *Measured Static Water Level 1.25 ft. Measured Pumping Water Level _____ft. After _____Hours at _____GPM
14. *Measuring Point (Describe) TOC Which is .3 ft. ____Above __X__Below Land Surface *Flowing: ____Yes __X__No
15. *Casing Material: ____Black Steel ____Galvanized __X__PVC ____Stainless Steel ____Not Cased ____Other _____
16. *Total Well Depth 37 ft. Cased Depth 32 ft. *Open Hole: From ____To____ft. *Screen: From 32 To 37 ft. Slot Size .01

17. *Abandonment: Other(Explain _____)

From 0 ft.	To 37 ft.	No. of Bags .75	Seal Material (Check One):	____Neat Cement	____Bentonite	X	Other	Neat/Portland Cement
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other	____
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other	____
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other	____
From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____	Other	____

18. *Surface Casing Diameter and Depth:

Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____

19. *Primary Casing Diameter and Depth:

Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____

20. *Liner Casing Diameter and Depth:

Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____

21. *Telescope Casing Diameter and Depth:

Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____
Dia ____in.	From ____ft.	To ____ft.	No. of Bags____	Seal Material (Check One):	____Neat Cement	____Bentonite	____Other	____

22. Pump Type (If known):
____Centrifugal ____Jet ____Submersible ____Turbine
Horsepower _____ Pump Capacity (GPM) _____
Pump Depth ____ft. Intake Depth ____ft.

23. Chemical Analysis (When Required):
Iron _____ppm Sulfate _____ppm Chloride _____ppm
____Laboratory Test ____Field Test Kit

24. Water Well Contractor:
*Contractor Name Raymond Robinson *License Number 2633 E-mail Address rrobinson@core-encon.com
*Contractor's Signature **Raymond Robinson** (I certify that the information provided in this report is accurate and true.) *Driller's Name (Print or Type) Raymond Robinson

*Permit No. MW-194086-1

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 BROAD STREET, BROOKSVILLE, FL 34604-6899
PHONE: (352) 796-7211 or (800) 423-1476
WWW.SWFWMD.STATE.FL.US

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
4049 REID STREET, PALATKA, FL 32178-1429
PHONE: (386) 329-4500
WWW.SJRWMD.COM

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
152 WATER MANAGEMENT DR., HAVANA, FL 32333-4712
(U.S. Highway 90, 10 miles west of Tallahassee)
PHONE: (850) 539-5999
WWW.NWFWMD.STATE.FL.US

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
P.O. BOX 24680
3301 GUN CLUB ROAD
WEST PLAM BEACH, FL 33416-4680
PHONE: (561) 686-8800
WWW.SFWMD.GOV

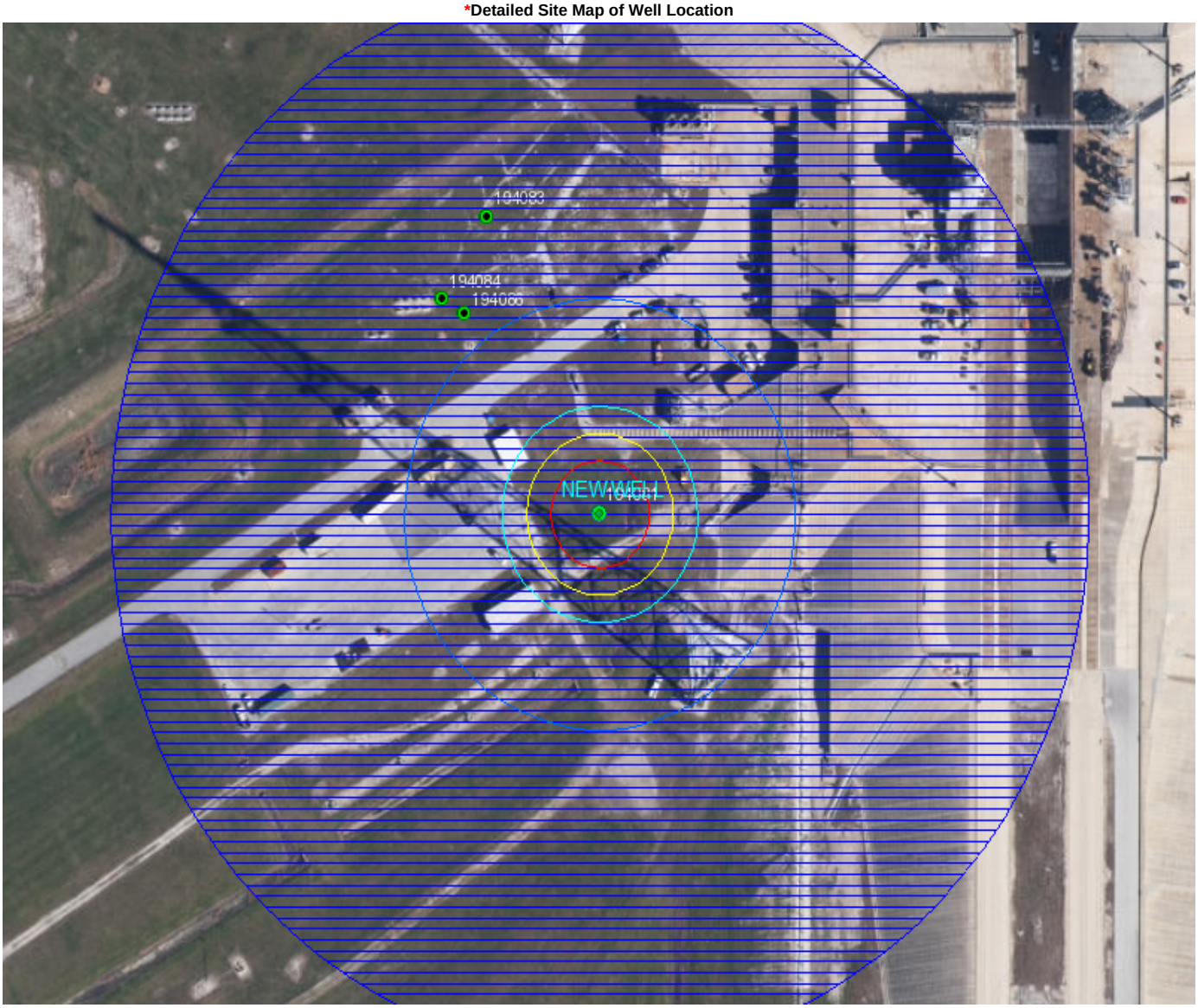
SUWANNEE RIVER WATER MANAGEMENT DISTRICT
9225 CR 49
LIVE OAK, FL 32060
PHONE: (386) 362-1001 or (800) 226-1066 (Florida only)
WWW.MYSUWANNEERIVER.COM

***DRILL CUTTINGS LOG** (Examine cuttings every 20 ft. or at formation changes. Note cavities and depth to producing zone. Grain Size: F=Fine, M=Medium, and C=Coarse)

From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	
From	ft.	To	ft.	Color		Grain Size (F, M, C)		Material	

Comments:

***Detailed Site Map of Well Location**



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APPENDIX C

WEIGHT TICKETS

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KSC Landfill
East Schwartz Road
Operated by BOSS
Supervisor- Derick Fowler

Transaction No. 69955

	Date	Time	Scale
In:			0
Out:	12/01/2022	09:23	1

Vehicle	O8A-XGS	WHITE F205 E
Account	Core Eng.	KEITH
Material	Concrete/D	DARCY
User1	KEITH	

User2D:
Comments:80ksc19d0012
Regular Transaction
Charge by Weight

Gross: 16160 lb
Tare: 11780 lb (K)
Net: 4380 lb

Driver Signature:
_____

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APPENDIX D

PHOTO LOG

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Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 1	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/18/2022

Description: Photo of KSC locators conducting utility locates at the southern most area of where the proposed crane pad will be. Near HVAC monitoring wells. The stakes mark the boundary of the crane pad area.



Photograph No.: 2	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/18/2022

Description: Photo of KSC locators conducting utility locates in the southern most area where the proposed crane pad will be. The stakes mark the boundary of the crane pad area.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 3	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 11/18/2022

Description: Photo of southern most area of where the proposed crane pad will be. Near HVAC monitoring wells. The stakes mark the boundary of the crane pad area. KSC utility locators completed marking out utilities.



Photograph No.: 4	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 11/18/2022

Description: Photo of KSC locators conducting utility locates in the southern most area where the proposed crane pad will be. Area of concern (orange box in the middle). Unable to verify if there is a utility or air sparge line.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 5	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/18/2022

Description: Photo of KSC locator conducting utility locates in between CP-5 and CP-16.



Photograph No.: 6	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/18/2022

Description: Photo of KSC locators conducting utility locates in between CP-16 and CP-5.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 7	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/18/2022

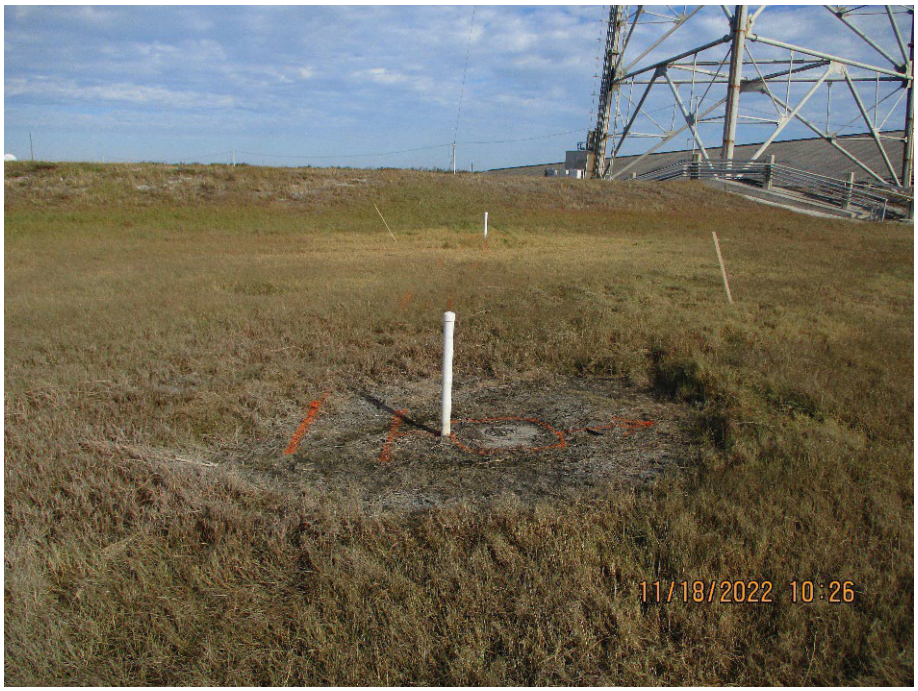
Description: Photo of KSC locators conducting utility locates in CP-4. Locators are having difficulty telling the difference between utilities and air sparge lines. Orange paint in photo is most likely air sparge lines according to figure. The line leads right into the eastern center of Z3 manifold.



Photograph No.: 8	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/18/2022

Description: Photo of utility locate leading into the eastern center of Z3 manifold. Most likely air sparge lines.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 9	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Northeast Date: 11/18/2022

Description: Photo of northern most area of the proposed crane pad in between CP-3 and CP-2. Water main marked by pvc stick ups.



Photograph No.: 10	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 11/18/2022

Description: Photo of northern most area of the proposed crane pad in between CP-3 and CP-2. Water main marked by pvc stick ups. CP-1 is the stake to the right of the pvc stick up.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 11	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 11/18/2022

Description: Photo of HGL employee refreshing KSC utility locate marks in the southern most area of the proposed crane pad. HVAC monitoring wells are located in the middle of the photo.



Photograph No.: 12	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Northeast Date: 11/18/2022

Description: Photo of HGL employee refreshing KSC utility locates in between CP-16 and CP-5.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 13	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 11/18/2022

Description: Photo of the overall site looking south from the escape tunnel at the northern most point near CP-1. The trailers in the background are where the southern most points of the proposed crane pad are located. Air sparge boxes of Z3 manifold are off to the right.



Photograph No.: 14	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 11/18/2022

Description: Photo of HGL employee refreshing KSC utility locates near CP-1. Overall view of the site facing south from the escape tunnel.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 15	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 11/28/2022

Description: Photo of the east side of Z3 manifold. CORE employee began potholing utility locate marks.



Photograph No.: 16	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 11/28/2022

Description: Photo of trench along the east side of Z3 manifold with some exposed lines. Water table is at 18” bgs.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 17	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Northwest Date: 11/28/2022

Description: Photo of the east side of Z3 manifold. The trench was exposed from the west side of the boundary line, (white paint line), near the Z3 manifold.



Photograph No.: 18	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 11/28/2022

Description: Photo of Z3 manifold on the northeast side of the air sparge boxes. Used utility probe to locate 2” feed line.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 19	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 11/28/2022

Description: Photo of the east side of Z3 manifold after the lines were exposed and the water was deviated into another trench prior to cutting.



Photograph No.: 20	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 11/28/2022

Description: Photo of the trench with the larger bundle of line to the north prior to cutting the lines.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 21	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/28/2022

Description: Photo of southern most area while Geo-scan employee conducted GPR survey to locate line for ASW0233 and any other utilities.



Photograph No.: 22	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/28/2022

Description: Photo of a water line approximately 8” bgs after CORE employee potholed an area that has been surveyed by the GPR. It runs directly over the air sparge line to ASW0233.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 23	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/28/2022

Description: Photo of air sparge line to ASW0233 that comes into the northwest side of the boundary near CP-8.



Photograph No.: 24	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Northwest Date: 11/28/2022

Description: Photo of air sparge line that attaches to ASW0233 after being cut and capped. Nicknamed 233-B. 20” bgs.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 25	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/28/2022

Description: Photo of air sparge line to ASW0233 prior to being cut and capped.



Photograph No.: 26	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/28/2022

Description: Photo of air sparge line that attaches to ASW0233 after being cut and capped. Nicknamed 233-A. 22” bgs.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 27	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/28/2022
Description: Photo of 233-A location after backfilling hole and restoring area.		



Photograph No.: 28	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 11/28/2022
Description: Photo of 233-B location after backfilling the hole and restoring area. Marked location with cones.		

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 29	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 11/28/2022

Description: Photo of lines that attach to air sparge wells 224-233 after being potholed, cut and capped. Six – 1" lines in total. 26" bgs.



Photograph No.: 30	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southeast Date: 11/28/2022

Description: Photo of disturbed soil where the lines leading to air sparge wells 224-233 were cut and capped. Backfilled and restored area.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 31	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/28/2022

Description: Photo of potholed area where four 1" lines leading to air sparge wells 207,214,213,and 219 were cut and capped. MW0010 visible towards the middle of the photo. Lines are 19" bgs.



Photograph No.: 32	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Northeast Date: 11/28/2022

Description: Photo of cut and capped lines leading to ASW's 207-219.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 33	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/28/2022
Description: Photo of potholed area where four - 2” and two - 1” lines leading to manifold boxes and air sparge wells 170 and 177 were cut and capped.		



Photograph No.: 34	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/28/2022
Description: Photo of the area where the four – 2” lines and two – 1” lines were cut and capped. Area backfilled and restored.		

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 35	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 11/28/2022
Description: Photo of NE corner of Z3 manifold where eight 1” and two – 2” lines were cut and capped.		



Photograph No.: 36	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 11/28/2022
Description: Photo of trench to east of Z3 manifold. Fifty three – 1” lines cut and capped. Three – 2” lines cut and capped as well.		

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 37	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southeast Date: 11/29/2022

Description: Photo of ASW0195 line after it was cut and capped approximately 15 ft. east of the boundary line. Line is located 20” bgs.



Photograph No.: 38	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 11/29/2022

Description: Photo of the entire northern layout of the proposed crane pad area. ASW0195 line was cut to the east of the boundary line (white stake next to roadway) and is the very first cone to the right of the manhole/vault.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 39	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/29/2022

Description: Photo of ASW0197 after it was cut and capped. Cut and capped fourteen lines that lead to ASW0197 and various other air sparge wells to the southeast and southwest. (SW – 193 and SE – 233). Lines are 20” bgs.



Photograph No.: 40	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 11/29/2022

Description: Photo of the hole where ASW0197 and fourteen air sparge lines were cut and capped. The east side of Z3 manifold in the background.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 41	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/29/2022

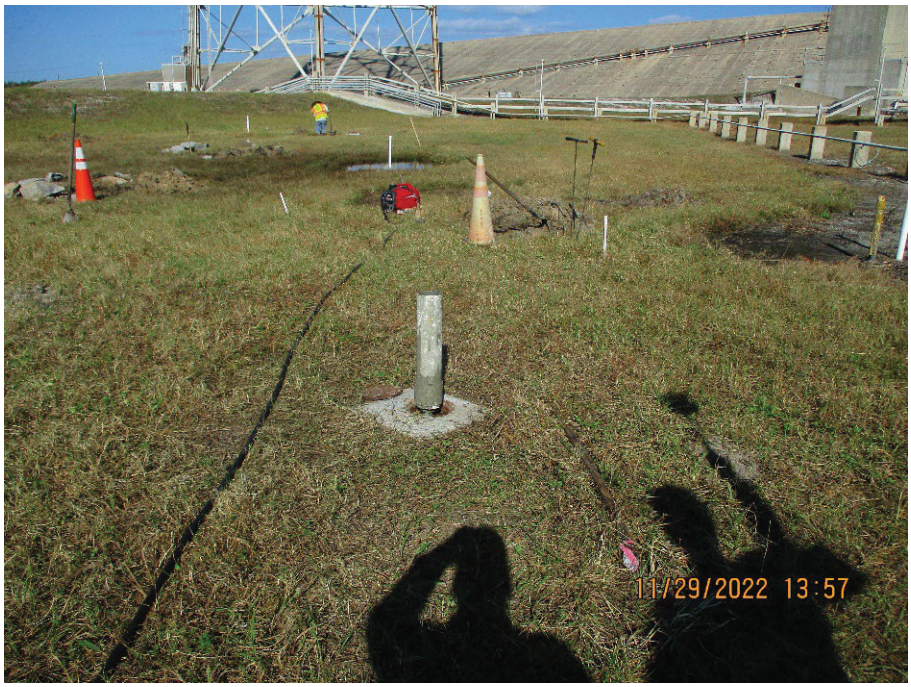
Description: Photo of an unknown monitoring well that is within the boundary line approximately 15 ft. southwest of ASW0204. (ASW0204 is just to the right of the parking cone).



Photograph No.: 42	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/29/2022

Description: Photo of unknown monitoring well that was located within the boundary line with manhole lid removed. ASW0204 next to the parking cone.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 43	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Northeast Date: 11/29/2022

Description: Photo of unknown well that was located inside the boundary line. After receiving the approval for abandonment of the well from the NASA RPM, (nicknamed ECS-IW0002S), CORE began abandonment. Abandoned the monitoring well using the tremie method.



Photograph No.: 44	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/29/2022

Description: Photo of monitoring well ECS-IW0002S after abandonment.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 45	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/29/2022

Description: Photo of CORE employees abandoning monitoring well HVAC – IW0002S and IW0002I. CORE employee's installing tremie pipe.



Photograph No.: 46	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Northeast Date: 11/29/2022

Description: Photo of CORE employee's abandoning monitoring well HVAC – IW0002I using the Tremie Method.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 47	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/29/2022

Description: Photo of CORE employee's abandoning monitoring well HVAC – IW0002IS using Tremie Method.



Photograph No.: 48	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/29/2022

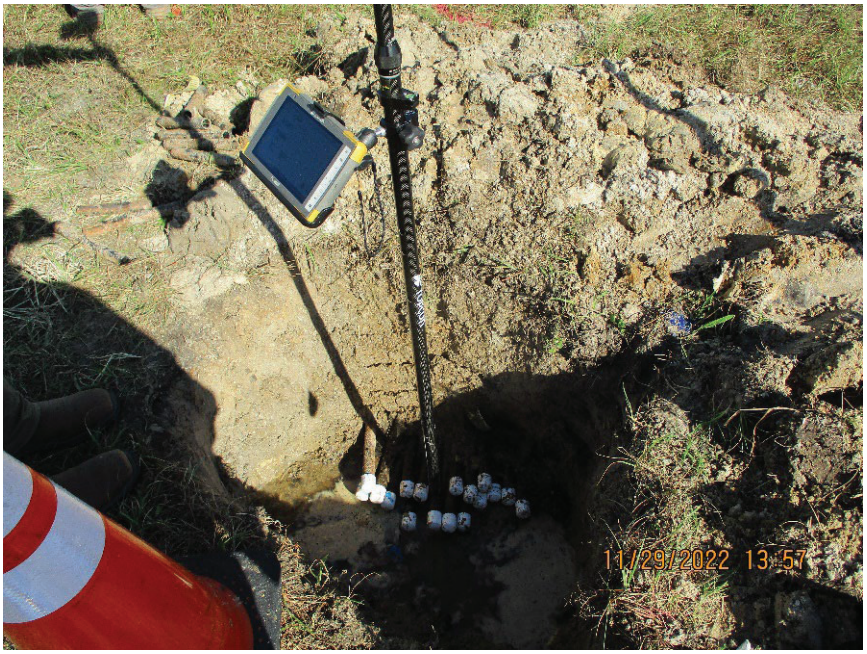
Description: Photo of HVAC wells after abandonment.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 49	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/29/2022

Description: Photo of eighteen air sparge lines that have been cut and capped in the trench 10 ft. east of ASW0202. The lines feed air sparge wells east of 208. Lines are 21" bgs.



Photograph No.: 50	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/29/2022

Description: Photo of HGL employee collecting the location and elevation of the previously mentioned eighteen air sparge lines.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 51	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/29/2022

Description: Photo of monitoring well MW0010 abandonment using the Tremie Method.



Photograph No.: 52	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/29/2022

Description: Photo of monitoring well MW0010 after abandonment.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 53	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/29/2022

Description: Photo of monitoring wells MW0016 and MW0017 after abandonment.



Photograph No.: 54	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/29/2022

Description: Photo of HGL employee's locating air sparge wells for abandonment utilizing metal detector. Locating ASW0168.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 55	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/30/2022

Description: Photo of demolished well pads after abandonment for mw's HVAC – IW0002IS and IW0002I. Stockpiled for off site disposal.



Photograph No.: 56	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 11/30/2022

Description: Photo of demolished well pads after abandonment for mw's HVAC – IW0002IS and IW0002I.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 57	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/30/2022

Description: Photo of HVAC – IW0002IS after abandonment and well pad removal.



Photograph No.: 58	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/30/2022

Description: Photo of HVAC - IW0002I after abandonment and well pad removal.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 59	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/30/2022

Description: Photo of monitoring well ECS – IW0003I prior to abandonment and pad removal. Water main marker to the middle right and ASW0177 to the upper left.



Photograph No.: 60	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 11/30/2022

Description: Photo of monitoring well ECS – IW0003I after abandonment and pad removal.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 61	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/30/2022

Description: Photo of ASW0175 after the grout was broken up and unearthed.



Photograph No.: 62	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 11/30/2022

Description: Photo of CORE employee's hauling concrete to their dump trailer for off site disposal.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 63	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/30/2022

Description: Photo of monitoring well nicknamed ECS – IW0002S well pad removal.



Photograph No.: 64	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/30/2022

Description: Photo of monitoring well nicknamed ECS – IW0002S after abandonment and area restoration. ASW0173 in the background.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 65	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/30/2022

Description: Photo of area where monitoring well pads for MW0016 and MW0017 were removed.



Photograph No.: 66	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/30/2022

Description: Photo of Kugelmann employee's on site. Began collecting air sparge well locations, air sparge line cut points and abandoned monitoring wells.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 67	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/30/2022

Description: Photo of ASW0177 after abandonment using the Tremie Method.



Photograph No.: 68	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/30/2022

Description: Photo of pin flag used to mark ASW0177 location.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 69	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 11/30/2022

Description: Photo of CORE employee's checking DTW and TWD of ASW0168 prior to abandonment.



Photograph No.: 70	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/30/2022

Description: Photo of ASW0168 after abandoning well using the Tremie Method.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 71	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/30/2022

Description: Photo of ASW0168 after abandonment and the hole was backfilled. Restored area.



Photograph No.: 72	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 11/30/2022

Description: Photo of ASW0168 pin flag used to mark location.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 73	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 12/01/2022

Description: Photo of CORE employee's preparing to haul off concrete debris from the monitoring well pad abandonments.



Photograph No.: 74	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/01/2022

Description: Photo of CORE employee's installing tremie pipe into ASW0175 prior to abandonment.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 75	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 12/01/2022

Description: Photo of ASW0175 after abandonment.



Photograph No.: 76	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/01/2022

Description: Photo of ASW0175 after abandonment. The hole has been backfilled and the area was restored.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 77	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 12/01/2022

Description: Photo of HGL employee attempting locate MW cluster ECS – IW0002SI, IW0002I, and IW0002D. The only well that was in the vicinity was the MW nicknamed ECS – IW0002S. TWD – 15.90'. After receiving approval from the NASA RPM, CORE employee's abandoned the well on 11/30/2022.



Photograph No.: 78	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/01/2022

Description: Photo of HGL employee using a metal detector to scan a 20 ft. perimeter around where the ECS – IW0002 cluster should be. HGL did not locate any other monitoring wells other than ECS – IW0002S.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 79	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/01/2022

Description: Photo of some grout and concrete debris was found in the vicinity of where the ECS – IW0002 cluster should be. Both orange paint markings are where IW0002I and IW0002D should be and were located on the Topcon.



Photograph No.: 80	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/01/2022

Description: Photo of a closer look at where the ECS – IW0002 cluster should be.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 81	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/01/2022

Description: Photo of ASW0187 after abandonment.



Photograph No.: 82	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 12/01/2022

Description: Photo of ASW018 after abandonment and the hole was backfilled. Restored area.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 83	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 12/01/2022

Description: Photo of CORE employee abandoning ASW0178 using the Tremie Method.



Photograph No.: 84	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 12/01/2022

Description: Photo of ASW0178 after abandonment.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 85	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 12/01/2022

Description: Photo of ASW0178 after the hole was backfilled. Restored area around the well location.



Photograph No.: 86	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 12/01/2022

Description: Photo of ASW0179 after abandonment.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 87	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 12/01/2022

Description: Photo of ASW0204 after abandonment using the Tremie Method.



Photograph No.: 88	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/01/2022

Description: Photo of ASW0204 after abandonment and the hole was backfilled. Restored area surrounding well location.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 89	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/01/2022

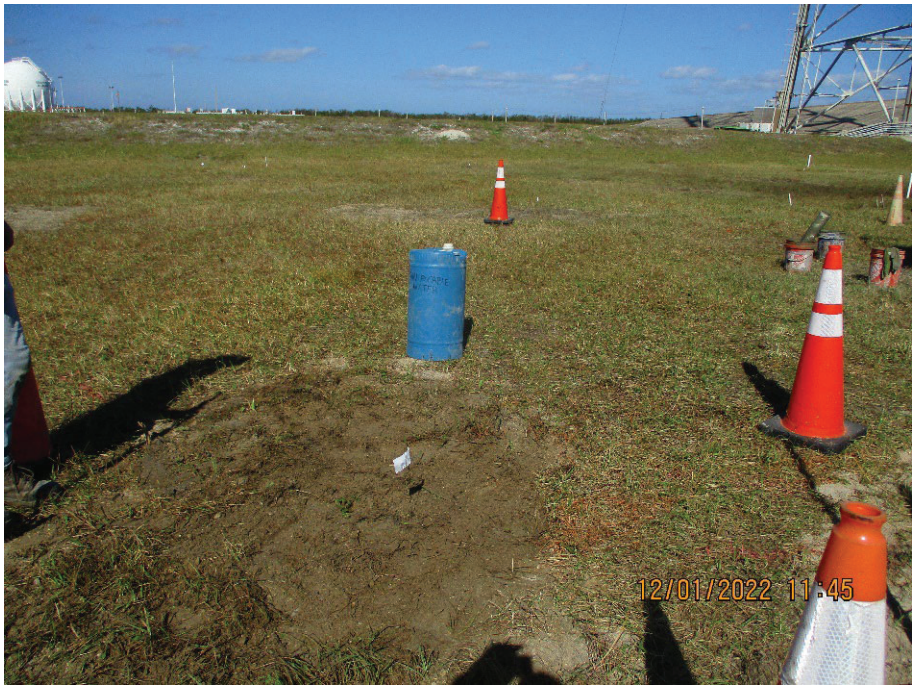
Description: Photo of CORE employee's abandoning ASW0202 using the Tremie Method.



Photograph No.: 90	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/01/2022

Description: Photo of ASW0202 after abandonment using the Tremie Method.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 91	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 12/01/2022

Description: Photo of ASW0202 after abandonment and the hole was backfilled. Restored area surrounding well location.



Photograph No.: 92	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/01/2022

Description: Photo of ASW0191 after abandonment using the Tremie Method.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 93	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 12/01/2022

Description: Photo of CORE employee's burying capped and cut lines entering/exiting the east end of Z3 manifold.



Photograph No.: 94	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 12/01/2022

Description: Photo of the east end of Z3 manifold after backfilling the hole with all the capped and cut lines. Restored location surrounding backfilled area.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 95	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 12/01/2022

Description: Photo of ASW0197 prior to abandonment.



Photograph No.: 96	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 12/01/2022

Description: Photo of ASW0197 after abandonment using the Tremie Method.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 97	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/01/2022

Description: Photo of ASW0196 prior to abandonment.



Photograph No.: 98	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/01/2022

Description: Photo of ASW0196 after abandonment using the Tremie Method.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 99	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 12/01/2022

Description: Photo of ASW0233 after removing manhole lid and prior to abandonment.



Photograph No.: 100	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 12/01/2022

Description: Photo of CORE employee's installing tremie pipe into ASW0233 prior to abandonment.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 101	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 12/01/2022

Description: Photo of ASW0233 with tremie pipe and funnel installed into well. Abandonment apparatus installed to prevent water/grout from making contact with the surrounding area/parking lot.



Photograph No.: 102	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 12/01/2022

Description: Photo of CORE employee's adding grout and dispersing water while abandoning ASW0233.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 103	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/01/2022

Description: Photo of ASW0233 after abandonment using Tremie Method.



Photograph No.: 104	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Northeast Date: 12/01/2022

Description: Photo of CORE employee abandoning ASW0233 and topping off the manhole vault.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 105	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/01/2022

Description: Photo of ASW0233 after abandonment of well and the manhole vault.



Photograph No.: 106	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southwest Date: 12/01/2022

Description: Photo of ASW0233 after CORE employee coned off the well location.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 107	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/02/2022

Description: Photo of ASW0198 prior to abandonment.



Photograph No.: 108	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/02/2022

Description: Photo of CORE employee's abandoning ASW0198 using the Tremie Method.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 109	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/02/2022

Description: Photo of ASW0198 after abandonment using Tremie Method.



Photograph No.: 110	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/02/2022

Description: Photo of ASW0201 after abandonment using Tremie Method.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 111	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Southeast Date: 12/02/2022

Description: Photo of CORE employee abandoning ASW0200 using Tremie Method.



Photograph No.: 112	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/02/2022

Description: Photo of CORE employee's abandoning ASW0200 using Tremie Method.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 113	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/02/2022

Description: Photo of ASW0200 after abandonment using the Tremie Method.



Photograph No.: 114	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/02/2022

Description: Photo of ASW0230 after abandonment using the Tremie Method.

Kennedy Space Center SLC 39B Air Sparge Abandonment and Restoration



Photograph No.: 115	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/02/2022

Description: Photo of ASW0233 after abandonment from 12/01/2022.



Photograph No.: 116	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing Northeast Date: 12/02/2022

Description: Photo of north end of proposed crane pad area after the last wells had been abandoned and all the potholed areas have been backfilled. ASW0198 is in the foreground.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 117	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing North Date: 12/02/2022

Description: Photo of the north end of proposed crane pad area with Z3 manifold to the left of the photo.



Photograph No.: 118	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing South Date: 12/02/2022

Description: Photo of the overall view of the site with the north end in the foreground and the south end to the left of the trailers in the background.

Kennedy Space Center SLC 39B Air Sparge
Abandonment and Restoration



Photograph No.: 119	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing East Date: 12/02/2022

Description: Photo of the south end of the proposed crane pad area with ASW0233 trench in the foreground.



Photograph No.: 120	Location: SLC 39B Photographer: Dustin Lupis	Direction: Facing West Date: 12/02/2022

Description: Photo of the south end of proposed crane pad area with the former location of HVAC wells IW0002S and IW0002I. Stakes and flagging tape marking the location where the wells were abandoned.

APPENDIX E

FIELD DOCUMENTATION

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Daily Activity Report

HydroGeoLogic, Inc
Exceeding Expectations

Daily Quality Control Report

Day	S	M	T	W	TH	F	S
						X	

Date: 11/18/2022

Remedial Project Manager:	Ryan O' Meara
HGL Project Manager:	Richard Smith
HGL Construction Manager:	Brad Mitchell
HGL Site Superintendent:	Dustin Lupis
HGL Site Safety and Health Officer:	Barry Huston
Contract No.	80KSC019D0012
Task Order No.	80KSC019F0224
Project Name:	KSC/NASA SLC 39B
Project No.	NS1011.02.03

Weather	Bright Sun		Clear	Overcast	Rain	Fog
			X			
Temp	Temperature (ºF)					
	Low			High		
	55			69		
Wind	Still	Moderate		High	Gust	
		X				
Humidity	Dry	Moderate		High	Rainfall	
				X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Site Superintendent	SLC 39B	4.5	0	4.5
William Duttenhaver	Field Technician	SLC 39B	4.5	0	4.5
Barry Huston	SSHO	SLC 39B	1.5	0	1.5
TOTAL HGL PERSONNEL ONSITE		**3**	**TOTAL HOURS WORKED**		**10.5**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
Geoff Card	ASA / Safety and Mission Assurance SA-1	SLC 39B	0.5
Jeff McDowell	KSC Utility Locator	SLC 39B	2
Alfredo George	KSC Utility Locator	SLC 39B	2
Russel Lowers	Kemcon Eco Surveyor	SLC 39B	0.5
Brenton Back	Kemcon Eco Surveyor	SLC 39B	0.5
TOTAL GOV PERSONNEL ONSITE		**5**		**5.5**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Jim Nelson	CORE / Construction Manager	SLC 39B	1.5	0	1.5
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**1**	**TOTAL HOURS WORKED**		**1.5**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

Daily Activity Report

3. Field Activities

DFOW / ACTIVITY	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Conduct Utility Locates And Eco	S	Conducted utility locates and eco survey

4. Testing and Sampling Activities

4.1 Inspections Conducted and Testing Conducted

Inspection Conducted	Pass / Fail	Description of Test Performed

4.2 Sampling Conducted

Location	COC#	Description of Media & Analysis

5. Job Safety: (Report violations, instructions given, corrective action taken)

Pinch Points, Slips, Trips, Falls, Biologicals, COVID-19, Struck-by, Hand Tools, Dehydration.

6. Description of Work Completed

0800 - All employees arrive at Pad Ops. Mob to SLC 39B gate. Sign in at turn styles. Conducted Nuts and Bolts meeting with Geoff Card.

0830 - Mob to air sparge abandonment location. Geoff Card offsite.

0835 - Conducted utility locates with Jeff M. and Alfredo with KSC/BOSS. Also, conducted eco survey with Russel L. and Brenton B. with KEMCON.

0900 - Completed eco survey. Russel L. and Brenton B. offsite.

1000 - Jeff M. and Alfredo G. completed utility locates. Jeff M. signed dig permit. Note - Due to inconclusive and questionable areas that were marked where there may or may not be utilities, Jeff M. noted that the site will be hand dig only.

1025 - Secure site. Escort all employees offsite.

1100 - Dustin L. and Parker D. back on site to refresh utility locates. Collect photos of utility locations.

1230 - Complete refreshing the utility locates. Secured site. All employees off site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Quality Control Representative and that the above information stated in this Daily Quality Control Report is accurate and representative of the work completed and conforms to approved Work Plan

Printed Name: Dustin Lupis **DATE: 11/18/2022**

Signature: Dustin Lupis

HGL
HydroGeoLogic, Inc.
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: ____
- [ ] Other: ____

Date/Time: 11/18/22 0810 Client: KSC/NASA

Location: SLC 39B Job No.: NS1011.02.01

Meeting/training conducted by: Dustin Lupis

Work Activities: Utility locates and Eco survey

Safety / Training Topics Presented

Chemical Hazards: VOC's

Physical Hazards: Struck by, pinch points, slips, trips, falls, COVID-19, biologicals.

Specific Safety Topic(s): Struck by - Local traffic.

Specific Training Covered: Be mindful of surroundings.

Attendees

Name Printed and Employee Number:	Signature:
Jeff McDowell	
ALFREDO GEORGE	
Russell Lowers	
Brenton Dack	
JIM NELSON	
Dustin Lupis	
William Duttenhaver	
BARRY HOSTON	
Geoff Cate	

CONTENTS

PAGE	REFERENCE	DATE

Location SLC 39B Date 01/18/22

Project / Client KSC/NASA

NS1011.02.01

Purpose - Conduct Utility locates & Eco survey Nuts & Bolts.
Personnel - HGL - D. Lupis, W. Dittenhaver, B. Huston, (CORE)
Jim Nelson, NASA - Jeff M & Alfredo G, Russ L - Kencon, Brenton B. Geoff Curd.
Equipment - work trucks, SSHP, flares, Paint, stakes.
Weather - Hi - 69° Lo - 55° Sunny Wind - 13 mph E
0800 - arrive at Pad ops facility. All attendees onsite.
0830 - Mob to SLC 39B air sparge abandonment location.
0835 - Conducted Utility locates & eco locates.
Jeff M, Alfredo G & Russ L. onsite/NASA. Geoff C.
on site to conduct Nuts & Bolts meeting.
0900 - completed eco survey with Russel Lowers.
Russel Lowers off site with Brenton B. Geoff
curd off site. Ryan O'meara attend Phone call.
1000 - Jeff. M & Alfredo G. completed all
Utility locates. Jeff M. signoff dig Permit
1025 - secure site. Escort all employees off site.
1100 - Dustin L. & Parker D. on site. Refresh
utility locates. collect photos of locates
1230 - Complete utility line refresh, secure site. All employees
off site after collecting photos, securing ~~site~~ site.

Rite in the Rain

Daily Activity Report

HydroGeoLogic, Inc
Exceeding Expectations

Daily Quality Control Report

Date:	**11/28/2022**
Remedial Project Manager:	Ryan O' Meara
HGL Project Manager:	Richard Smith
HGL Construction Manager:	Brad Mitchell
HGL Site Superintendent:	Dustin Lupis
HGL Site Safety and Health Officer:	Barry Huston
Contract No.	80KSC019D0012
Task Order No.	80KSC019F0224
Project Name:	KSC/NASA SLC 39B
Project No.	NS1011.02.03

Day	S	M	T	W	TH	F	S
		X					

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Temperature (ºF)	
	Low	High
	66	75

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
			X	

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Site Superintendent	SLC 39B	6	0	6
William Duttenhaver	Field Technician	SLC 39B	6	0	6
Barry Huston	SSHO	SLC 39B	6	0	6
Jason Bublitz	Senior Scientist	SLC 39B	6	0	6
TOTAL HGL PERSONNEL ONSITE		**4**	**TOTAL HOURS WORKED**		**24**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Ray Robinson	CORE Engineering	SLC 39B	6	0	6
James Nelson	CORE Engineering	SLC 39B	6	0	6
James Page	CORE Engineering	SLC 39B	6	0	6
Justin Vaden	CORE Engineering	SLC 39B	6	0	6
Felipe Garcia	CORE Engineering	SLC 39B	6	0	6
Elijah Stevenson	CORE Engineering	SLC 39B	6	0	6
Keith Fuller	CORE Engineering	SLC 39B	6	0	6
Michael Wood	Geo-Scan	SLC 39B	6	0	6
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**8**	**TOTAL HOURS WORKED**		**48**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

Daily Activity Report

3. Field Activities

DFOW / ACTIVITY	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Mobilization	**S/F**	Began mobilization
GPR Survey Site	**S/F**	GPR scan work site
Pothole Surveyed Areas	**S**	Began potholing surveyed areas

4. Testing and Sampling Activities

4.1 Inspections Conducted and Testing Conducted

Inspection Conducted	Pass / Fail	Description of Test Performed

4.2 Sampling Conducted

Location	COC#	Description of Media & Analysis

5. Job Safety: (Report violations, instructions given, corrective action taken)

Pinch Points, Slips, Trips, Falls, Biologicals, COVID-19, Struck-by, Hand Tools, Dehydration.

6. Description of Work Completed

0700 - HGL and CORE meet at CCSFS field office. Conduct TGSM and call KSC support for dig status.

0730 - Conduct site safety orientation with Core. Delays with badging of CORE and Geo-Scan employees. NASA RPM addressed badging issue.

0800 - All employees mob to Pad Ops at SLC 39B. Escort Geo-Scan employee from the Badging Station to SLC 39B. While trying to access SLC 39B, several CORE employees and Geo-Scan employee were still having issues with their badge. Both Geo-Scan and CORE employee's had to return to to address badge issues.

0940 - Some HGL and CORE employee's enter SLC 39B and mob to work site to begin potholing near the air sparge boxes.

1000 - Uncovered lines entering the east side of the air sparge boxes. Noted water table at 18". Began diverting water away from lines into a temporary trench dug next to the lines.

1015 - After some badging issues, all HGL, CORE, and Geo-Scan employees on site. Began GPR surveying of site. Began potholing surveyed areas. Mobilize equipment, tools, trailers, and supplies to work site.

1030 - Geo-Scan set up and calibrated GPR unit.

1050 - Began GPR surveying area surrounding HVAC monitoring wells on the south end of the proposed crane pad. After potholing and locating the air sparge line connecting to ASW0233, the line was cut and capped near the curb of the parking lot and where the line came into the boundary line to the Where the line was cut and capped near the curb, that was labeled 233-A and is located 22" bgs. The area where it was cut and capped coming into the boundary is labeled as 233-B and is located 20" bgs. Collected locations and elevations on Topcon. Backfilled 233-A and 233-B holes.

1130 - GPR surveyed the trench which houses ASW0224 - 0233 lines on both sides of the asphalt road leading to the launch pad. Potholed north side of the asphalt where the trench goes under the road. Located six lines leading to ASW0230, 224, 231, 232, 228, and 233 at 26" bgs. Six 1" lines in total Cut and capped lines. Collected location on Topcon.

1215 - Backfilled hole that contains ASW0230, 224, 231, 232, 228, and 233 on the north side of the road. Collected location on the Topcon.

1230 - GPR surveyed trench with lines from ASW0202 to 207. Potholed trench between ASW207 and MW0010.

1310 - Unearthed, cut, and capped ASW0207, 213, 214, and 219. Four - 1" lines in total located 19" bgs. Collected location on Topcon.

1330 - After the area has been GPR surveyed, Pothole trench SW of ASW0177 to expose four 2" feed lines and two 1" lines that belong to ASW0177 and 170. Lines are 22" bgs. Cut and capped four 2" main feed lines and both 1" lines ASW0177 and 0170.

1350 - Collected location of lines where they were cut and capped. Backfilled trench/hole. Mob to NE section of manifold Z3.

1400 - Unearth eight - 1" lines and two - 2" lines. These lines were located near the northeast corner of Z3 manifold. Lines are 18" bgs. Collected line locations on Topcon. Cut and capped the eight - 1" lines and two - 2" lines.

1415 - Continued unearthing lines entering/exiting the east side of the Z3 manifold. Cut and capped 16 - 1" lines and 3 - 2" lines located near the corner of Z3 manifold. The lines are 24" bgs.

1430 - Unearthed approximately forty three - 1" and three - 2" lines entering/exiting the center/east of the Z3 manifold. Eight of the 1" lines were cut and capped due to the lines looping back around to the south. There were forty six lines cut and capped. Eight of the forty six lines were capped on both sides making a total of fifty six lines that were capped. Lines are 24" bgs. Collected photos of trenched area on the entire east side of Z3 manifold.

1535 - Finished with GPR survey, potholing, and cut and capping of potholed lines. Pin flag/cone off all the potholed lines. Secure site. Prep for demob.

1550 - Site is secure. Mob to SLC 39B gate. Badge out CORE and Geo-Scan employee's. All employee's off site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

Daily Activity Report

I Certify that I am the Contractor's Authorized Quality Control Representative and that the above information stated in this Daily Quality Control Report is
accurate and representative of the work completed and conforms to approved Work Plan

Printed Name: Dustin Lupis	**DATE: 11/28/2022**
Signature: Dustin Lupis	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 11-28-22 07:30

Client: Kennedy Space Center

Location: LC39B

Job No.: NS1011.02

Meeting/training conducted by: Dustin Lupis

Work Activities: HAND DIGGING TO SPOT A.S. LINES

Safety / Training Topics Presented

Chemical Hazards: N/A

Physical Hazards: SLIP TRIP & FALL, UTILITY STRIKES

Specific Safety Topic(s): BE CAREFUL WHEN HAND EXCAVATING.

Specific Training Covered:

Attendees

Name Printed and Employee Number:	Signature:
William Dattenbaver	
Jimmy Page	
JIM NELSON	
JUSTIN VADEN	
Raymond Robinson	
[illegible]	
Dustin Lupis	

SAFETY MEETING/TRAINING LOG
(Continued)

Date: 11/28/22 Job No.: NS1011.02

Attendees

Name Printed and Employee Number:	Signature:
Jason Bublitz	
Michael Wood	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Kennedy Space Center
LC 39B

INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

Topics Covered (Please initial each):

1. P.O. Names of personnel responsible for site safety;
2. P.O. Report unsafe conditions and unsafe actions, wear assigned PPE, sign in and out daily, attend morning tailgate meetings, assist co-workers with tasks, and maintain safe and healthful work environment;
3. P.O. Existing known safety and health hazards on site including potential exposure to PCBs, Asbestos, Lead, Mercury, and Silica;
4. P.O. Required PPE, use and care;
5. P.O. Provisions for medical care and facilities;
6. P.O. Hazard Communication Program, includes discussion of Safety Data Sheets (SDS) location for hazardous chemicals currently used/stored on site;
7. P.O. Location of safety equipment (e.g., fire extinguishers, first aid kits, AED's, etc.);
8. P.O. Site emergency evacuation procedures, Rally Points, and route location;
9. P.O. Heat/Cold Stress monitoring/response procedures;
10. P.O. Components and structure of the Site Health and Safety Program including the SSHP and AHAs
11. P.O. I understand that I have 100% "Stop Work Authority" for safety-related issues identified;
12. P.O. Procedures for reporting and correcting unsafe conditions or practices;
13. P.O. Designated Smoking areas;
14. P.O. Responsibilities for reporting all accidents and illnesses;
15. P.O. Names of cardiopulmonary resuscitation (CPR) and first-aid trained personnel assigned to the project;
16. P.O. Review of applicable AHAs; List: _____
17. P.O. Identification of the Emergency Contact Information;
18. P.O. Locations of functioning communication devices for personnel not equipped with cellular telephones and for personnel working in areas with limited or no cellular telephone reception;
19. P.O. Locations of emergency medical facilities;
20. P.O. Spill response procedures;
21. P.O. Provided current copies licensing, certifications, and/or clearances, as applicable for individual responsible work activity.

Orientation Conducted By: Barry Huston
Planned Work Activities: Air Sparge system abandonment
Attendee Name Printed: William Duttenhaver **Date:** 11/28/2022
Signature: [signature] **Employer:** HGL

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Kennedy Space Center
LC 39B

INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

Topics Covered (Please initial each):

1. MM Names of personnel responsible for site safety;
2. MM Report unsafe conditions and unsafe actions, wear assigned PPE, sign in and out daily, attend morning tailgate meetings, assist co-workers with tasks, and maintain safe and healthful work environment;
3. MM Existing known safety and health hazards on site including potential exposure to PCBs, Asbestos, Lead, Mercury, and Silica;
4. MM Required PPE, use and care;
5. MM Provisions for medical care and facilities;
6. MM Hazard Communication Program, includes discussion of Safety Data Sheets (SDS) location for hazardous chemicals currently used/stored on site;
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11. MM I understand that I have 100% "Stop Work Authority" for safety-related issues identified;
12. MM Procedures for reporting and correcting unsafe conditions or practices;
13. MM Designated Smoking areas;
14. MM Responsibilities for reporting all accidents and illnesses;
15. MM Names of cardiopulmonary resuscitation (CPR) and first-aid trained personnel assigned to the project;
16. MM Review of applicable AHAs; List: _____
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18. MM Locations of functioning communication devices for personnel not equipped with cellular telephones and for personnel working in areas with limited or no cellular telephone reception;
19. MM Locations of emergency medical facilities;
20. MM Spill response procedures;
21. MM Provided current copies licensing, certifications, and/or clearances, as applicable for individual responsible work activity.

Orientation Conducted By: BARRY HUSTON
Planned Work Activities: AIR SPARGE SYSTEM ABANDONMENT
Attendee Name Printed: JIM NELSON **Date:** 11/28/23
Signature: [signature] **Employer:** GCRE

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

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INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

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1. JV Names of personnel responsible for site safety;
2. JV Report unsafe conditions and unsafe actions, wear assigned PPE, sign in and out daily, attend morning tailgate meetings, assist co-workers with tasks, and maintain safe and healthful work environment;
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4. JV Required PPE, use and care;
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6. JV Hazard Communication Program, includes discussion of Safety Data Sheets (SDS) location for hazardous chemicals currently used/stored on site;
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19. JV Locations of emergency medical facilities;
20. JV Spill response procedures;
21. J Provided current copies licensing, certifications, and/or clearances, as applicable for individual responsible work activity.

Orientation Conducted By: BARRY HUSTON
Planned Work Activities: AIR SPARGE SYSTEM ABANDONMENT
Attendee Name Printed: JUSTIN VADEN **Date:** 11/28/22
Signature: _____ **Employer:** CORE

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

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INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

Topics Covered (Please initial each):

1. MF Names of personnel responsible for site safety;
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5. MF Provisions for medical care and facilities;
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19. MF Locations of emergency medical facilities;
20. MF Spill response procedures;
21. MF Provided current copies licensing, certifications, and/or clearances, as applicable for individual responsible work activity.

Orientation Conducted By: BARRY HUSTON
Planned Work Activities: AIR SPARGE ABANDONMENT
Attendee Name Printed: KEITH FULLER **Date:** 11/28/2022
Signature: [signature] **Employer:** CORE ENGINEERING

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

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INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

Topics Covered (Please initial each):

1. JP Names of personnel responsible for site safety;
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4. JP Required PPE, use and care;
5. JP Provisions for medical care and facilities;
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20. JP Spill response procedures;
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Orientation Conducted By: BARRY HUSTON
Planned Work Activities: Hand Dig AIR SPARGE SYSTEM ABANDONMENT
Attendee Name Printed: _____ **Date:** 11/28/22
Signature: _____ **Employer:** CORE

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

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INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

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19. JB Locations of emergency medical facilities;
20. JB Spill response procedures;
21. JB Provided current copies licensing, certifications, and/or clearances, as applicable for individual responsible work activity.

Orientation Conducted By: Barry Huston
Planned Work Activities: IM Abandonment
Attendee Name Printed: Jason Bubik **Date:** 11/28/22
Signature: _____ **Employer:** HGL

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Kennedy Space Center
LC 39B

INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

Topics Covered (Please initial each):

1. DL Names of personnel responsible for site safety;
2. DL Report unsafe conditions and unsafe actions, wear assigned PPE, sign in and out daily, attend morning tailgate meetings, assist co-workers with tasks, and maintain safe and healthful work environment;
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4. DL Required PPE, use and care;
5. DL Provisions for medical care and facilities;
6. DL Hazard Communication Program, includes discussion of Safety Data Sheets (SDS) location for hazardous chemicals currently used/stored on site;
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20. DL Spill response procedures;
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Orientation Conducted By: Barry Huston
Planned Work Activities: SLC 39B Air Sparge Abandonment
Attendee Name Printed: Dustin Lupis **Date:** 11/28/22
Signature: _____ **Employer:** HGL

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

HGL
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Exceeding Expectations

Kennedy Space Center
LC 39B

INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

Topics Covered (Please initial each):

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20. N F Spill response procedures;
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Orientation Conducted By: BARRY HOSTON
Planned Work Activities: AIR SPARGE SYSTEM ABANDONMENT
Attendee Name Printed: [illegible] **Date:** 11/28/2022
Signature: [illegible] **Employer:** CAPE

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Kennedy Space Center
LC 39B

INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

Topics Covered (Please initial each):

1. RR Names of personnel responsible for site safety;
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5. RR Provisions for medical care and facilities;
6. RR Hazard Communication Program, includes discussion of Safety Data Sheets (SDS) location for hazardous chemicals currently used/stored on site;
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9. RR Heat/Cold Stress monitoring/response procedures;
10. RR Components and structure of the Site Health and Safety Program including the SSHP and AHAs
11. RR I understand that I have 100% "Stop Work Authority" for safety-related issues identified;
12. RR Procedures for reporting and correcting unsafe conditions or practices;
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14. RR Responsibilities for reporting all accidents and illnesses;
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17. RR Identification of the Emergency Contact Information;
18. RR Locations of functioning communication devices for personnel not equipped with cellular telephones and for personnel working in areas with limited or no cellular telephone reception;
19. RR Locations of emergency medical facilities;
20. RR Spill response procedures;
21. RR Provided current copies licensing, certifications, and/or clearances, as applicable for individual responsible work activity.

Orientation Conducted By: Barry Houston
Planned Work Activities: TS Removal & well abandonment
Attendee Name Printed: Raymond Rodriguez **Date:** 11-28-22
Signature: _____ **Employer:** CORE E&C

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

HGL
HydroGeoLogic, Inc
Exceeding Expectations

Kennedy Space Center
LC 39B

INITIAL SITE SAFETY ORIENTATION ACKNOWLEDGMENT FORM

Topics Covered (Please initial each):

1. MV Names of personnel responsible for site safety;
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5. MV Provisions for medical care and facilities;
6. MV Hazard Communication Program, includes discussion of Safety Data Sheets (SDS) location for hazardous chemicals currently used/stored on site;
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14. MV Responsibilities for reporting all accidents and illnesses;
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19. MV Locations of emergency medical facilities;
20. MV Spill response procedures;
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Orientation Conducted By: BARRY HUSTON
Planned Work Activities: AIR STARGE ABANDONMENT
Attendee Name Printed: X Michal Wood **Date:** 11/28/22
Signature: X [signature] **Employer:** GEOSCAN

List known allergens and/or adverse health conditions Safety personnel should be aware of:

Voluntary Information: Any diseases or previous injuries you would like Safety to know about?

Location SLC 39B Date 11/28/22

Project / Client KSC/NASA

NS1011.02.03

purpose - Mobilization. GPR survey. Begin potholing.
personnel - HGL - D. Lupis, W. Dutterhaver, J. Bublitz, B. Huston.
CORE - R. Robinson, J. Nelson, various crew. Geo-scan - M. Wood.
Equipment - work truck, GPS, hand tools, SSHP.
weather - Hi - 75° Lo - 66° partly cloudy, wind - 1mph W
0700 - Meet at CCSFS field office, conduct TGSM. call for dig status
0730 - conduct site safety orientation with CORE
Note - Delays due to badging for Eli (CORE) and Michael (Geo-scan). Contacted Ryan Omeara with NASA. Called ICSC support. Verified dig status.
0800 - Mob to pad ops at SLC 39B. Escort M. Wood from KSC badging to SLC 39B pad ops.
0845 - All employees on site. Prep to enter SLC 39B launch pad facility. Note. M. Wood (Geo-scan), J. Vaden + Eli (CORE) still having issues with badging. Contacted badging. B. Huston escort M. Wood to badging station to correct badge issue.
0940 - D. Lupis, R. Robinson, J. Nelson, K. Fuller, Mob to site. Began potholing near air sparge boxes.
1000 - Uncovered some lines at 18" entering the east side of the air sparge boxes. Noted water at 18". Began diverting water away from lines in trench.
1015 - ~~Mob~~ M. Wood, J. Vaden, ~~&~~ E. Stevenson, J. Bublitz, W. Dutterhaver, + B. Huston on site.
1030 - M. Wood began setting up GPR equipment.

Location SLC 39B Date 11/28/22

Project / Client KSC/NASA

NS1011.02.03

1050 - After calibrating GPR, M. Wood began to survey air sparge line that leads to ASW0233 near asphalt + MW HVAC IW 25 + 2I. Cut + capped at the ~~bend~~ curb and boundary line. 233-A is located near the curb and the line is 22" bgs. 233-B at the boundary line is 20" bgs. Collected locations on GPS.
1130 - Back filled 233-A + B. GPR lines 224, 230, 231, 232, 228 + 233 at north side ~~of~~ the ~~road~~ curb near the asphalt. 6 lines at 26" bgs. cap lines.
1215 - Back fill lines 224, 230, 231, 232, 228 + 233 near asphalt on the north side of the road. Collect location on GPS. Began GPR of 207, 213, 214, 219.
1245 - Dig trench in between ASW207 → MW0010.
1310 - Found lines to - 207, 213, 214, + 219. Cut + capped lines.
1330 - Collect location + depth of lines 207, 213, 214 + 219 19" bgs. 4 lines total. ~~Back fill~~ Pot Mob to 4-2" main feed lines + lines going to 0170 + 0177. Dig trench.
1345 - Unearth lines to 0170 + 0177. Also the 4 main feed lines to Zones 7, 18 + 23. 6 lines total. 4-2" 2-1". Cut + capped all 6 lines.
1400 - Collect trench with 4 main feed lines + AS0170 + 0177. on GPS. All lines 22" bgs. Back filled trench/hole. GPR NE of manifold 23.

Rite in the Rain

14

Location SLC 39B Date 11/28/22

Project / Client KSC/NASA

NS1011.02.03

1405- Unearth 8-1" & 2-2" lines. Lines located NE ~~corner~~ corner of Z3 manifold. Line leading to 0186. leg. Lines are 18" bgs. Cut and cap 8-1" & 2-2" lines at the NE corner of Z3 manifold.
1420 15 Collect NE corner of manifold Z3. on GPS.
Continued following trench to the SE corner of Z3 manifold. Unearthed 16-1" lines & 3-2" lines.
Began cutting and capping 16-1" & 3-2" lines on SE corner of manifold Z3.
1430- Finished cutting & capping 16-1" & 3-2" lines located at the SE side of ~~the~~ manifold Z3.
1440 - Unearthed lines going out from the East of the Z3 manifold. center of the trench. that lead out to ASW202 leg & 178 leg. Began cutting & capping 38-1" lines. Collected photos of trenched area.
1535- Finished potholing and GPR survey. Secured site. Marked all potholes, Prepped for demob
1550- Site is secure. Mob to SLC 39B gate, Sign out CORE and Geo-Scan employees, All employees offsite.

Daily Activity Report

HydroGeoLogic, Inc
Exceeding Expectations

Daily Quality Control Report

Date: 11/29/2022

Remedial Project Manager:	Ryan O' Meara
HGL Project Manager:	Richard Smith
HGL Construction Manager:	Brad Mitchell
HGL Site Superintendent:	Dustin Lupis
HGL Site Safety and Health Officer:	Barry Huston
Contract No.	80KSC019D0012
Task Order No.	80KSC019F0224
Project Name:	KSC/NASA SLC 39B
Project No.	NS1011.02.03

Day	S	M	T	W	TH	F	S
			X				

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Temperature (ºF)	
	Low	High
	69	78

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
			X	

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Site Superintendent	SLC 39B	10	0	10
William Duttenhaver	Field Technician	SLC 39B	10	0	10
Barry Huston	SSHO	SLC 39B	10	0	10
Jason Bublitz	Senior Scientist	SLC 39B	10	0	10
TOTAL HGL PERSONNEL ONSITE		**4**	**TOTAL HOURS WORKED**		**40**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
Geoff Card	NASA / Safety and Health	SLC 39B	0.5
TOTAL GOV PERSONNEL ONSITE	**1**		**0.5**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Ray Robinson	CORE Engineering	SLC 39B	10	0	10
James Nelson	CORE Engineering	SLC 39B	10	0	10
Justin Vaden	CORE Engineering	SLC 39B	10	0	10
Felipe Garcia	CORE Engineering	SLC 39B	10	0	10
Elijah Stevenson	CORE Engineering	SLC 39B	10	0	10
Keith Fuller	CORE Engineering	SLC 39B	10	0	10
Daniel Forester	Tetratech	SLC 39B	1	0	1
TOTAL SUBCONTRACTOR PERSONNEL ONSITE	**7**	**TOTAL HOURS WORKED**			**61**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

Daily Activity Report

3. Field Activities

DFOW / ACTIVITY	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Pothole Surveyed Areas	C	Continued potholing surveyed areas
Cut And Cap Air Sparge Lines	S	Began cut and capping air sparge lines
Abandon Monitoring Wells	S	Began abandoning monitoring wells

4. Testing and Sampling Activities

4.1 Inspections Conducted and Testing Conducted

Inspection Conducted	Pass / Fail	Description of Test Performed

4.2 Sampling Conducted

Location	COC#	Description of Media & Analysis

5. Job Safety: (Report violations, instructions given, corrective action taken)

Pinch Points, Slips, Trips, Falls, Biologicals, COVID-19, Struck-by, Hand Tools, Dehydration.

6. Description of Work Completed

0700 - HGL and CORE meet at SLC 39B Pad Ops parking lot. Conduct TGSM and call KSC support for dig status.

0730 - Badge and escort all HGL and CORE employee's into SLC 39B. Mob to site.

0745 - Continued to pothole lines and air sparge wells. Needed to utilize metal detector and Topcon to triangulate the air sparge wells.

0845 - Cut and capped the line to ASW0195 approximately 15ft. east of where the line enters the eastern boundary. Line is 20" bgs. Note - There were delay's locating air sparge wells due to a malfunctionwith the Topcon. Corrected Topcon malfunction.

1010 - Geoff Card with NASA on site. Continued potholing and uncovering air sparge wells.

1016 - Geoff Card off site.

1035 - Due to the distance of ASW0186 from the proposed crane pad area, we contacted Anel Sanchez with Advon to assess whether we needed to abandon the well. The well was considered a low priority by Anel and Ryan O'Meara but was set to be abandoned. Continued potholing air sparge wells.

1200 - CORE and HGL on lunch break.

1230 - CORE and HGL back from lunch. Note - There was a monitoring well found within the boundary of the proposed crane pad that was not labeled. The total well depth was 15.90'. It is located within the vacinity of where ECS - IW0002SI, 2I, and 2D are supposed to be. After running a metal detector over a 20 ft. radius of the area, could not locate anymore wells. Also, attempted to locate any other wells utilizing the Topcon. Contacted NASA RPM, Ryan O'Meara, and he approved with abandonment of the monitoring well we labeled as ECS - IW0002S. Collected photos and coordinates of the

1245 - Need to dig down and recut approximately 45 ft. northeast of where CORE originally cut the four - 2" main air feed lines and two - 1" lines leading to ASW0170 and ASW0177 due to incorrect boundary line location. Note - monitoring well ECS - IW0003I is located within approximately 15 ft. of the crane pad boundary line to the northeast. Confirmed with Ryan O'Meara about abandoning of monitoring well ECS - IW0003I.

1300 - Cut and capped fourteen 1" lines within a foot of ASW0197. Lines are 20" bgs. Began abandonment of monitoring wells HVAC - IW0002S and HVAC - IW0002I. Used Tremie method to abandon monitoring wells.

1320 - Completed abandonment of HVAC - IW0002S.

1335 - Completed abandonment of HVAC - IW0002I.

1340 - Cut and capped eighteen - 1" lines in a trench approximately 8 ft. to the east of ASW0202. Lines are 21" bgs. Collected location on Topcon.

1348 - Cut and capped three - 1" lines. Lines are 23" bgs. The three lines are connected to ASW204, 205, and 206 to the east.

1350 - Abandoned monitoring well MW0010.

1400 - Abandoned monitoring well MW0002S.

1410 - Exposed the four main feed lines approximately 45 ft. northeast from the original cut (4-2" and 2-1" lines). Cut and capped lines. Lines are 21" bgs.

1440 - Continued locating air sparge wells. Abandoned monitoring well MW0016.

1455 - Abandoned monitoring well MW0017.

1515 - Conduct inventory of air sparge wells - 22; monitoring wells - 7; and 14 potholed areas where the lines were cut. The approximate amount is 117 lines that were cut and capped. CORE and HGL will conduct a final count and total at the end of abandonment.

1545 - Secure site. Daniel Forester with Tetratech on site. Assessed site and air sparge lines that were cut and capped.

1630 - Site is secured. All HGL, CORE, and Tetratech employee's off site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

Daily Activity Report

I Certify that I am the Contractor's Authorized Quality Control Representative and that the above information stated in this Daily Quality Control Report is
accurate and representative of the work completed and conforms to approved Work Plan

Printed Name: Dustin Lupis	**DATE: 11/29/2022**
Signature: Dustin Lupis	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 11-29-22

Client: Kennedy Space Center

Location: LC39B

Job No.: NS1011.02

Meeting/training conducted by: B HUSTON

Work Activities: AIR SPARGE ABANDONMENT

Safety / Training Topics Presented

Chemical Hazards: PORTLAND CEMENT

Physical Hazards: OPEN EXCAVATIONS

Specific Safety Topic(s): CARE WHEN USING GENERATORS

SAFETY IN FUELING GENERATORS AND MIXING GROUT

Specific Training Covered:

Attendees

Name Printed and Employee Number:	Signature:
JUSTIN VADEN	
[illegible]	
Felipe Garcia	
Dustin Lugis	
Jason Bublik	
William Dyttenhaver	
Raymond Robinson	

SAFETY MEETING/TRAINING LOG
(Continued)

Date: 11-29-22 Job No.: NS1011.02

Attendees

Name Printed and Employee Number:	Signature:
Elijah Stevenson	
JIM NELSON	James Nelson

Location SLC 39B Date 11/29/22 15

Project / Client KSC / NASA

NS1011202.03

purpose - Cont. potholing and capping AS well lines.
Personnel - HGL - D. Lupis, J. Bubitz, W. Dittenhaver
B. Huston, CORE - R. Robinson, J. Nelson, various crew.
Equipment - work trucks, hand tools, SSHP, GPS.
weather - Hi - 78° Lo - 69° sunny wind - 2 mph E
0700 - All employees meet to a site call for dig status conduct TGSM.
0730 - Badge and escort all HGL + CORE employees into SLC 39B facility and mob to site.
0745 - Continued potholing lines and air sparge wells. Pump down potholed areas where lines were cut and capped. ~~Especially east side of AS holes.~~ PC
0845 - cut and capped ASW0195 line coming into east location of crane pad area. Collected location on GPS. 20th bags Continued uncovering air sparge wells.
Note - delays in locating some air sparge wells due to loss of signal with TOPCON, corrected issue.
1010 - Geoff card with NASA on site. Continued potholing and uncovering air sparge wells.
1016 - Geoffs card offsite.
1035 - Axel Sanchez with Advan on site to assess ASW186 and 187 locations. Need to abandon ASW187 but ASW186 is considered a low priority according to Ryan O'Meara. to be abandoned.
1130 - ASW186 located. Set ~~to be abandoned~~.

Rite in the Rain

16 Location SLC 39B Date 11/29/22

Project / Client KSC/NASA

NS1011.02.03

1200 - CORE & HGL on Lunch.
1230 - CORE & HGL back from Lunch.
Note - Well located inside boundary line that is not labeled. TWD -15,190', Believed to be in the vacinity of ECS-IW0002I, 2I, & 2D. Only located the one well. Contacted NASA PM Ryan O'meara and got clearance to abandon the well. collected Photos and GPS coordinates.
1245 - Need to recut approximately 45 ft. NE of 0170-0177 4-2" line 2-1" line cut due to incorrect boundary line location. Note - MW ECS-IW0003I Is just outside the boundary to the NE. Recommend abandonment. will confirm with Ryan O'meara.
1300 - Cut and capped 14-1" lines near ASW0197. Began abandonment of MW's HVAC-IW0002S and HVAC-IW0002I. Used Trem-pel approved method.
1345 - Completed abandonment of HVAC-IW0002S and HVAC-IW0002I. Cut and capped 14-1" lines South of Z3 manifold just north of ASW0197. Lines 20' bgs.
~~1350 - Began abandonment of MW0010. Cut and capped 18-1" lines east of ASW202. Lines 21" bgs~~
~~1405 - Completed abandonment of MW0010.~~
1415 -

DL

Location SLC 39B Date 11/29/22 17

Project / Client KSC/NASA

NS1011.02.03

1340 - Cut & Capped 18-1" lines in trench approximately 8' to east of ASW0202. 21" bgs.
1348 - cut and capped 3-1" lines. 23" bgs. 3 lines going to ASW204-206 to the east.
1350 - Abandoned monitoring well MW0010.
1400 - Abandoned monitoring well MW0002S. Note - ~~Unsure~~ This is the MW found inside of the boundary line that is unlabelled we nicknamed it MW0002S.
1410 - Exposed the 4 main feed lines approximately 45 ft. east of the 0170-0177 cut (4-2" lines & 2-1" lines going to 0170-0177). Cut and capped 4-2" lines 21" bgs.
1440 - continued locating Air Sparge wells of concern. ASW0168 & ASW0174. Exposed wells using Topcon & metal detector. Abandoned monitoring wells MW0016 & MW0017.
1515 - Inventory of Air Sparge wells, MW's and lines that were cut. 22 - Air Sparge wells; 7 - Monitoring wells; 14 - areas where lines were cut; Approximately 117 lines cut & capped. Will need to conduct a recount & final total.
1545 - Secured site. Daniel Forester w/ Terratech. Assessed site & lines that were cut & capped.
1630 - site secure. All employees off site. Rain

Daily Activity Report

HydroGeoLogic, Inc
Exceeding Expectations

Daily Quality Control Report

Date:	**11/30/2022**
Remedial Project Manager:	Ryan O' Meara
HGL Project Manager:	Richard Smith
HGL Construction Manager:	Brad Mitchell
HGL Site Superintendent:	Dustin Lupis
HGL Site Safety and Health Officer:	Barry Huston
Contract No.	80KSC019D0012
Task Order No.	80KSC019F0224
Project Name:	KSC/NASA SLC 39B
Project No.	NS1011.02.03

Day	S	M	T	W	TH	F	S
				X			

Weather	Bright Sun		Clear	Overcast	Rain	Fog
			X			
Temp	Temperature (ºF)					
	Low			High		
	68			81		
Wind	Still	Moderate		High	Gust	
		X				
Humidity	Dry	Moderate		High	Rainfall	
				X		

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Site Superintendent	SLC 39B	8	0	8
William Duttenhaver	Field Technician	SLC 39B	8	0	8
Barry Huston	SSHO	SLC 39B	8	0	8
Jason Bublitz	Senior Scientist	SLC 39B	8	0	8
TOTAL HGL PERSONNEL ONSITE		**4**	**TOTAL HOURS WORKED**		**32**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
Ryan O'Meara	NASA / RPM	SLC 39B	1
Anel Sanchez	Advon / Project Manager	SLC 39B	1
TOTAL GOV PERSONNEL ONSITE	**2**		**2**

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Ray Robinson	CORE Engineering	SLC 39B	8	0	8
James Nelson	CORE Engineering	SLC 39B	8	0	8
Justin Vaden	CORE Engineering	SLC 39B	8	0	8
Felipe Garcia	CORE Engineering	SLC 39B	8	0	8
Elijah Stevenson	CORE Engineering	SLC 39B	8	0	8
Keith Fuller	CORE Engineering	SLC 39B	8	0	8
Mason French	Kugelmann Surveying	SLC 39B	1	0	1
Shaun Kugelmann	Kugelmann Surveying	SLC 39B	1	0	1
TOTAL SUBCONTRACTOR PERSONNEL ONSITE	**8**	**TOTAL HOURS WORKED**			**50**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

Daily Activity Report

3. Field Activities

DFOW / ACTIVITY	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Abandon Air Sparge Wells	S	Began abandoning air sparge wells
Abandon Monitoring Wells	C	Continued abandoning monitoring wells

4. Testing and Sampling Activities

4.1 Inspections Conducted and Testing Conducted

Inspection Conducted	Pass / Fail	Description of Test Performed

4.2 Sampling Conducted

Location	COC#	Description of Media & Analysis

5. Job Safety: (Report violations, instructions given, corrective action taken)

Pinch Points, Slips, Trips, Falls, Biologicals, COVID-19, Struck-by, Hand Tools, Dehydration.

6. Description of Work Completed

0730 - CORE and HGL met at SLC 39B Pad Ops parking lot. Conduct TGSM and call KSC Support for dig permit status.
0745 - Mob to SLC 39B gate to badge in CORE and HGL employee's.
0800 - All HGL and CORE employee's on site.
0810 - Began removal of well pads for HVAC - IW0002S and IW0002I. Stockpile concrete, manhole vaults, and manhole lids for disposal.
0830 - Completed removal of well pads for HVAC - IW0002S and IW0002I. Cut stick ups to 0.5' bgs.
0845 - Began removal of ECS - IW0003I well pad. Stockpiled concrete and debris for disposal off site.
0920 - Completeted removal of ECS - IW0003I well pad. Cut well stick up to 0.5' bgs. Began clearing concrete and debris from site into dump trailer.
1000 - Completed removal of the well pads for MW0016 and MW0017 and cut well stick up to 0.5' bgs. Relocate concrete debris into dump trailer.
1030 - Completed removal of MW0002S. Cut well stick up to 0.5' bgs. Placed concrete and debris into dump trailer.
1045 - Completed removal of MW0010. Cut stick up for well down to 0.5' bgs. Placed concrete into dump trailer.
1050 - Kugelmann surveyors on site. Began surveying abandoned air sparge well, monitoring well, and areas where air sparge lines were cut locations.
1135 - Ryan O'Meara and Anel Sanchez on site. Kugelmann surveyors completed collecting locations. Kugelmann off site. Began site walk with Ryan and Anel.
1215 - Completed site walk with Ryan and Anel. Ryan and Anel off site. Began backfilling locations where lines were cut.
1230 - Began abandonment of ASW0170. Used tremie method to abandon well.
1255 - Completed abandonment of ASW0170. Backfill hole after abandonment and slope edges to prevent trip hazards. Mob to ASW0177.
1300 - Began abandonment of ASW0177. Used tremie method to abandon well.
1315 - Completed abandonment of ASW0177. Backfill hole after abandonment and slope edges to prevent trip hazards. Mob to ASW0169.
1320 - Began abandonment of ASW0169. Used tremie method to abandon well.
1330 - Completed abandonment of ASW0169. Backfill hole after the abandonment and slope the edges of the hole to prevent trip hazards.
1340 - Mob to ASW0176. Began abandonment of ASW0176. Used tremie method to abandon well. CORE took 15 minute break.
1420 - Completed abandonment of ASW0176. Backfill hole after the abandonment and slope the edges of the hole to prevent trip hazards.
1430 - Mob to ASW0168. Began abandonment of ASW0168. Used tremie method to abandon well.
1440 - Completed abandonment of ASW0168. Backfill hole after the abandonment and slope the edges of the hole to prevent trip hazards.
1450 - Clean up site. Remove concrete debris and load into dump trailer for off site disposal.
1530 - Secured site. All employee's off site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Quality Control Representative and that the above information stated in this Daily Quality Control Report is accurate and representative of the work completed and conforms to approved Work Plan

Printed Name: Dustin Lupis **DATE: 11/30/2022**

Daily Activity Report

Signature: Dustin Lupis	

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 11-30-22 Client: Kennedy Space Center

Location: LC39B Job No.: NS1011.02

Meeting/training conducted by: B. HUSTON

Work Activities: HAND EXCAVATION, WELL ABANDONMENT

Safety / Training Topics Presented

Chemical Hazards: PORTLAND CEMENT, PVC GLUE, GASOLINE

Physical Hazards: TRIP & FALL, GENERATORS

Specific Safety Topic(s): CARE IN FUELING, CARE & INSPECTION OF HAND TOOLS

Specific Training Covered:

Attendees

Name Printed and Employee Number:	Signature:
Dustin Lupis	
William Duttenhaver	
Jason Bublik	
Keith Fuller	
Maynard Robinson	
Elijah Stevenson	
JIM NELSON	
JUSTIN VAUGN	
FELIPE GARCIA	

Location SLC 39B Date 11/30/22

Project / Client KSC/NASA

NS1011.02.03

Purpose - Begin abandonment of air sparge wells/MW
personnel - H&L - Dustin L., Barry H., Parker D., Jason B.
CORE - Jim N., Raymond R., various crew see T&SM.
Equipment - work trucks, hand tools, SSHP, abandonment materials.
Weather - Hi-81° Lo-68° sunny wind - 1mph SW
0730 - All employees on site, call for dig permit status. conduct T&SM.
0745 - Mob into SLC 39B facility. badge CORE employees in at gate.
0800 - All H&L & CORE employees on site.
0810 - Began breaking up HVAC - IW0002S & HVAC - IW0002I well pads. stockpile concrete for offsite disposal. ~~Top off~~
0830 - Complete removal of HVAC - IW0002S & HVAC - IW0002I well pads. Prep to cut ~~below~~ stick up 0.5' bgs.
0845 - Began abandonment of ECS - ~~MW~~ IW0003I pad and well stick up. Stock pile concrete for offsite disposal.
0920 - ECS - IW0003I well pad has been removed and the well has been abandoned & grouted.
0930 - Began cleaning site. Off load concrete & grout from abandoned pad into dump trailer.
1000 - ~~Began~~ Removed pad for MW0016 & MW0017 and cut wells to 0.5' bgs. Remove concrete and placed in dump trailer.

Location SLC 39B Date 11/30/22

Project / Client KSC/NASA

NS1011.02.03

1030 - Removed well pad to MW00025 and cut well 0.5' bgs. Placed concrete in dump trailer.
1045 - Removed well pad to MW0010 and cut well to 0.5' bgs. Placed concrete in dump trailer.
1050 - Kugelmann Surveyors on site. Began ~~collecting~~ collecting AS well & line cut locations. Also, collected three wells that were abandoned.
1135 - Ryan O'meara from NASA on site. Anel Sanchez from Advon on site. ~~Began~~ Kugelmann surveyors finished surveying AS wells & line cut locations. Kugelmann surveyors offsite.
Began site walk with Ryan, Anel, & CORE
1215 - Finished site walk with Ryan, Anel & CORE, Ryan & Anel off site. ~~Began~~ Backfill 4-2" lifts
1230 - Began abandonment of ASW0170.
1255 - Completed abandonment of ASW0170. Backfill ASW0170 hole after abandonment. Mob to ASW0177.
1300 - Began abandonment of ASW0177.
1315 - Completed abandonment of ASW0177. Backfill and slope edges of hole to prevent trip hazard.
1320 - Mob to ASW0169. Cleared around well head.
~~1330~~ - Began abandonment of ASW0169.
1330 - completed abandonment of ASW0169.
1335 - Back fill and slope hole. To prevent trip hazards.

Rite in the Rain

20 Location SLC 39B Date 11/30/22

Project / Client KSC/NASA

NS104.02.03

1340 M&S to ASW0176. Began abandonment of ASW0176.
1420 - completed abandoning ASW0176. ~~Bate~~ Dr.
- Back fill hole to ASW0176. Slope sides of hole to prevent trip hazards.
Note - CORE took 15 minute break at 1345 Back from break at 1400.
1430 - M&S to ASW0168. Began abandonment of ASW0168
1440 - Complete abandonment of ASW0168. Backfill hole to ASW0168. Slope sides to prevent trip hazards
1450 - Clean up site. Load the rest of the concrete and place into dump trailer.
1530 - Secure site. All employees off site.
Note - used ~~trench~~ method/approved method for new abandonments./air sparge well abandonments,

Daily Activity Report

HGL HydroGeoLogic, Inc — Exceeding Expectations	Daily Quality Control Report
Date:	**12/1/2022**
Remedial Project Manager:	Ryan O' Meara
HGL Project Manager:	Richard Smith
HGL Construction Manager:	Brad Mitchell
HGL Site Superintendent:	Dustin Lupis
HGL Site Safety and Health Officer:	Barry Huston
Contract No.	80KSC019D0012
Task Order No.	80KSC019F0224
Project Name:	KSC/NASA SLC 39B
Project No.	NS1011.02.07

Day	S	M	T	W	TH	F	S
					X		

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Temperature (ºF)	
	Low	High
	67	75

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
			X	

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Site Superintendent	SLC 39B	8	0	8
William Duttenhaver	Field Technician	SLC 39B	8	0	8
Barry Huston	SSHO	SLC 39B	8	0	8
Jason Bublitz	Senior Scientist	SLC 39B	8	0	8
TOTAL HGL PERSONNEL ONSITE		**4**	**TOTAL HOURS WORKED**		**32**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Ray Robinson	CORE Engineering	SLC 39B	8	0	8
James Nelson	CORE Engineering	SLC 39B	8	0	8
Justin Vaden	CORE Engineering	SLC 39B	8	0	8
Felipe Garcia	CORE Engineering	SLC 39B	8	0	8
Elijah Stevenson	CORE Engineering	SLC 39B	8	0	8
Keith Fuller	CORE Engineering	SLC 39B	8	0	8
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**6**	**TOTAL HOURS WORKED**		**48**

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

Daily Activity Report

3. Field Activities

DFOW / ACTIVITY	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Abandoned Air Sparge Wells	C	Continued abandonment of air sparge wells
Site Restoration	S	Began site restoration

4. Testing and Sampling Activities

4.1 Inspections Conducted and Testing Conducted

Inspection Conducted	Pass / Fail	Description of Test Performed

4.2 Sampling Conducted

Location	COC#	Description of Media & Analysis

5. Job Safety: (Report violations, instructions given, corrective action taken)

Pinch Points, Slips, Trips, Falls, Biologicals, COVID-19, Struck-by, Hand Tools, Dehydration.

6. Description of Work Completed

0700 - HGL and CORE met at SLC 39B Pad Ops parking lot. Conduct TGSM and call KSC support for dig status.
0715 - Badge in all HGL and CORE employee's at SLC 39B gate. Mob to site.
0745 - finish cleaning up debris and trash from site and disposing into dump trailer.
hole to
0805 - Began abandonment of ASW0175. Used tremie method to abandon well.
0820 - Completed abandonment of ASW0175. Backfill hole and slope sides of the hole to prevent trip hazards.
0830 - Mob to ASW0174. Began abandonment of ASW0174. Used tremie method to abandon the well. Cut and capped line coming off ASW0174.
0855 - Completed abandonment of ASW0174. Backfill hole and slope sides to prevent trip hazards. Mob to ASW0186.
0910 - Began abandonment of ASW0186. Used tremie method to abandon well. Cut and cap line to ASW0186.
0925 - Completed abandonment of ASW0186. Backfill hole and slope sides of hole to prevent trip hazards. Mob to ASW0187.
0930 - CORE crew took 15 minute break. Jim N, Felipe G, and Keith F back on site.
0940 - CORE crew back from break. Began abandonment of ASW0187. Cut and cap 1" line attached at the well. Used tremie method to abandon well.
1000 - Completed abandonment of ASW0187. Backfill hole. Mob to ASW0178.
1010 - Began abandonment of ASW0178. Used tremie method to abandon well.
1025 - Completed abandonment of ASW0178. Backfill hole. Mob to ASW0179.
1030 - Began abandonment of ASW0179. Used tremie method to abandon well.
1050 - Completed abandonment of ASW0179. Backfill hole. Mob to ASW0204.
1055 - Began abandonment of ASW0204. Used tremie method to abandon well.
1115 - Completed abandonment of ASW0204. Backfill hole. Mob to ASW0202.
1132 - Began abandonment of ASW0202. Used tremie method to abandon well.
1150 - Completed abandonment of ASW0202. Backfill hole. Mob to ASW0191.
1155 - CORE crew take lunch.
1230 - CORE crew back from lunch. Began abandonment of ASW0191. Used tremie method to abandon well. Began to backfill open trenches where
were cut and capped.
1255 - Completed abandonment of ASW0191. Backfill hole. Mob to ASW0197.
1300 - Began abandonment of ASW0197. Used tremie method to abandon well.
1310 - Completed abandonment of ASW0197. Backfill hole. Mob to ASW0199.
1313 - Began abandonment of ASW0199. Used tremie method to abandon well.
1320 - Completed abandonment of ASW0199. Backfill hole. Mob to ASW0196.
1323 - Began abandonment of ASW0196. Used tremie method to abandon well.
1333 - Completed abandonment of ASW0199. Backfill hole. Mob to ASW0196. Completed trench that runs along the east side of Z3 manifold.
1340 - Mob to ASW0233 and remove manhole lid. Note - needed to remove galavanized nippleon top of well casing to expose well for abandonment.
1400 - Began abandonment of ASW0233. Used tremie method to abandon well. Used tool to drain water into bucket to avoid making mess on asphalt.
1425 - Completed abandonment of ASW0233. Filled concrete to the top of grade/manhole vault. Coned off ASW0233. Contacted POC at PMI about well.
1500 - Secure site. Conducted house cleaning of entire site.
1520 - Site is secure. All HGL and CORE mob to SLC 39B to badge out. All employee's off site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Daily Activity Report

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Quality Control Representative and that the above information stated in this Daily Quality Control Report is accurate and representative of the work completed and conforms to approved Work Plan

Printed Name: Dustin Lupis	**DATE: 12/1/2022**
Signature: Dustin Lupis	

HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 12-1-22

Client: Kennedy Space Center

Location: LC39B

Job No.: NS1011.02

Meeting/training conducted by: B HUSTON

Work Activities: HAND EXCAVATION, WELL ABANDONMENT

Safety / Training Topics Presented

Chemical Hazards: PORTLAND CEMENT, GASOLENE

Physical Hazards: OPEN EXCAVATIONS

Specific Safety Topic(s): GENERATOR SAFETY, CARE WHEN MIXING GROUT,

Specific Training Covered:

Attendees

Name Printed and Employee Number:	Signature:
JIM NELSON	James Nelson
DUSTIN LUPIS	
JASON BUSH	
WILLIAM DUTTENHAVER	
RAYMOND ROBINSON	
TYLER GREEN	
ELI STEVENSON	
KEITH FULLER	
JUSTIN VADEN	

Location SLC 39B Date 12/01/22

Project / Client KSC/NASA

NS1011.02.

purpose - Continued abandonment of air sparge wells
Personnel - HGL - Dustin L., Jason B, Parker D., Barry H
CORE - Raymond R., Jim N, various crew (see TGSM).
Equipment - Work trucks, dump trailer, hand tools, 55HP.
Weather - Hi 75° Lo 67° Partly cloudy wind 14 mph
0700 - All HGL & CORE employees on site. Conduct TGSM. Call KSC support for dig status.
0715 - Mob to site. Badge employees in at gate.
- Jim N, Felipe, Keith F, finish loading trailer, prep to demob off site and off load material & trailer at different site ~~after~~ & off load concrete at dump.
0745 - Clean up the rest of the debris from the site (cut HDPE, trash, left over material).
0800 - Jim N, Felipe G, Keith F off site to haul concrete debris and trash to dump.
0805 - Began abandonment of ASW0175.
0820 - completed abandonment of ASW0175. Back fill hole and sloped sides to prevent trip haz.
0830 - Mob to ASW0174. Began abandonment of ASW0174
0855 - cut and capped 1" line going back to air sparge box Completed abandonment of ASW0174. Back fill hole
0910 - Mob to ASW0186. Began abandonment of ASW0186.
0914 - cut and cap line for ASW0186.
0925 - complete abandonment of ASW0186.
Back fill hole. Mob to ~~A~~SW0187. Rite in the Rain

Location SLC 39B Date 12/01/22

Project / Client KSC/NASA

NS1011.02

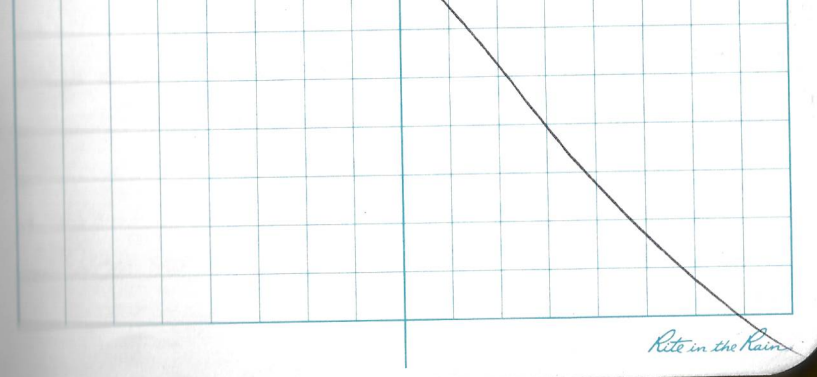
0930- CORE crew take break w/Jim N, Felipe C, on site.
0940- Began abandonment of ASW 0187. Cut & cap 1" line.
1000- Completed abandonment of ASW0187, Backfill hole.
1010 - Mob to ASW0178. Began abandonment of ASW0178.
1025- Completed abandonment of ASW0178. Back fill hole.
1030 - Mob to ASW0179. Began abandonment of ASW0179.
1050 - Completed abandonment of ASW0179. Backfill area.
1055 - Mob to ASW0204. Began abandonment of ASW0204.
1115 - Completed abandonment of ASW0204, Backfill hole
1132 - Mob to ASW0202. Began abandonment of ASW0202.
1150 - Completed abandonment of ASW0202. Backfill area.
1155 - Mob to ASW0191. CORE crew on Lunch.
1230 - CORE crew back from lunch. Began abandonment of ASW0191. Began back filling open trenches where lines were cut and capped.
1255 - Completed abandonment of ASW0191. Back fill hole.
1300 - Mob to ASW0197. Began abandonment of ASW0197
1310 ~~Finished~~ completed abandonment of ASW0197. Back fill hole.
1313 - Mob to ASW0199. Began abandonment of ASW0199
1320 - Completed abandonment of ASW0199. Backfill hole
1323 - Mob to ASW0196. Began abandonment of ASW0196
1333 - Completed abandonment of ASW0196. Back fill hole
Completed back filling trench ~~near~~ East of air sparge box.
1340 - Mob to ASW0233 and remove lid. Note - needed to remove galvanized nipple on top

Location SLC 39B Date 12/01/22

Project / Client KSC/NASA

NS1011.02

of well casing to expose well for abandonment
1400 - Began abandonment of ASW0233.
1425 - Completed abandonment of ASW0233. Filled concrete to the top of the manhole vault. Cored off ASW0233 location. Contacted PMI employees and alerted them to the air sparge well location.
1500 - Secured site. Conducted hose cleaning
1520 - Site is secure. Demob off site to SLC-39B main gate to sign out. All employees offsite.
Note - used tremie approved method to abandon air sparge/Monitoring wells.



Rite in the Rain

Daily Activity Report

HGL HydroGeoLogic, Inc — Exceeding Expectations	**Daily Quality Control Report**
Date:	**12/2/2022**
Remedial Project Manager:	Ryan O' Meara
HGL Project Manager:	Richard Smith
HGL Construction Manager:	Brad Mitchell
HGL Site Superintendent:	Dustin Lupis
HGL Site Safety and Health Officer:	Barry Huston
Contract No.	80KSC019D0012
Task Order No.	80KSC019F0224
Project Name:	KSC/NASA SLC 39B
Project No.	NS1011.02.07

Day	S	M	T	W	TH	F	S
						X	

Weather	Bright Sun	Clear	Overcast	Rain	Fog
		X			

Temp	Temperature (ºF)	
	Low	High
	68	77

Wind	Still	Moderate	High	Gust
		X		

Humidity	Dry	Moderate	High	Rainfall
			X	

1. List of On-Site Personnel:

1.1 List of HGL Personnel Onsite

HGL Employee Name	Position	Location	Hours	Non-Hours	Total Hours
Dustin Lupis	Site Superintendent	SLC 39B	3.5	0	3.5
William Duttenhaver	Field Technician	SLC 39B	3.5	0	3.5
Barry Huston	SSHO	SLC 39B	3.5	0	3.5
TOTAL HGL PERSONNEL ONSITE		**3**	**TOTAL HOURS WORKED**		**10.5**

1.2 List of GOV. Personnel Onsite

Personnel Onsite	Affiliation / Position	Location	Est. Total Hours
TOTAL GOV PERSONNEL ONSITE	**0**		

1.3 Subcontractors Onsite

Employee Name	Company / Position	Location	Hours	Non-Hours	Total Hours
Ray Robinson	CORE Engineering	SLC 39B	3.5	0	3.5
Keith Fuller	CORE Engineering	SLC 39B	3.5	0	3.5
Felipe Garcia	CORE Engineering	SLC 39B	3.5	0	3.5
TOTAL SUBCONTRACTOR PERSONNEL ONSITE		**3**	**TOTAL HOURS WORKED**		

2. List of Equipment

2.1 Heavy Equipment

Equipment	Date Arrived/Departed	Date of Safety Check	Hours Used	Hours Idle	Hours Repair

2.2 Instrumentation & Equipment

Description Of Instrumentation	Date Arrived/Departed	Pre/Post Calibration Conducted	Cal Form Completed	Pass / Fail	Hours Used

Daily Activity Report

3. Field Activities

DFOW / ACTIVITY	S = Start C = Continuing F = Finish	Description of Work Actually Performed / Material Deliveries
Abandon Air Sparge Wells	**F**	Finish abandoning air sparge wells
Site Restoration	**F**	Finish site restoration

4. Testing and Sampling Activities

4.1 Inspections Conducted and Testing Conducted

Inspection Conducted	Pass / Fail	Description of Test Performed

4.2 Sampling Conducted

Location	COC#	Description of Media & Analysis

5. Job Safety: (Report violations, instructions given, corrective action taken)

Pinch Points, Slips, Trips, Falls, Biologicals, COVID-19, Struck-by, Hand Tools, Dehydration.

6. Description of Work Completed

0700 - HGL and CORE meet at SLC 39B Pad Ops parking lot. Conduct TGSM and call KSC support for dig status.
0720 - Mob to SLC 39B main gate and badge in CORE and HGL crews.
0740 - Assessed ASW0233 concrete finish.
0755 - Mob to ASW0198. Began abandonment of ASW0198. Used tremie method to abandon well.
0820 - Completed abandonment of ASW1098. Backfill hole. Mob to ASW0201.
0825 - Began abandonment of ASW0201. Used tremie method to abandon well.
0835 - Completed abandonment of AWS0201. Backfill hole. Mob to ASW0200.
0836 - Began abandonment of ASW0200. Used tremie method to abandon well.
0844 - Completed abandonment of ASW0200. Backfill hole. Mob to ASW0230.
0850 - Began abandonment of ASW0230. Used tremie method to abandon well.
0905 - Completed abandonment of ASW0230. Backfill hole.
0915 - Began clean up of the entire site. Removed pin flags and loose debris from site.
1005 - Complete clean up site. Collected photos of site restoration. Secure site.
1010 - Site is secure. All employee's off site.

7. 3-PHASE INSPECTION (Preparatory / Initial / Final Follow-Up)

Name of Inspection Held	Gov. Notified (Y/N)	Definable Feature of Work	Checklist Completed

I Certify that I am the Contractor's Authorized Quality Control Representative and that the above information stated in this Daily Quality Control Report is accurate and representative of the work completed and conforms to approved Work Plan

Printed Name: Dustin Lupis **DATE: 12/2/2022**

Signature: Dustin Lupis

HGL
HydroGeoLogic, Inc
Exceeding Expectations

SAFETY MEETING/TRAINING LOG

- [x] Tailgate (daily)
- [ ] Activity Hazard Analysis
- [ ] Pre-Task Hazard Analysis (prior to new task or operation)
- [ ] Site Safety Orientation (new personnel)
- [ ] Supervisor's (monthly)
- [ ] Supervisor's (weekly)
- [ ] UXO Awareness
- [ ] Asbestos Awareness
- [ ] Health and Safety Plan Addendum: _____
- [ ] Other: ___

Date/Time: 12-2-22

Client: Kennedy Space Center

Location: LC39B

Job No.: NS1011.02

Meeting/training conducted by: B HUSTON

Work Activities: WELL ABANDONMENT, BACK FILL

Safety / Training Topics Presented

Chemical Hazards: PORTLAND CEMENT

Physical Hazards: OPEN EXCAVATION

Specific Safety Topic(s): CARE USING PORTLAND, REFUELING GENERATORS.

Specific Training Covered:

Attendees

Name Printed and Employee Number:	Signature:
William Duttenhaver	
Dustin Lupis	
Keith Fuller	
Felix Gracia	
Raymond Robinson	

Location SLC 39B Date 12/02/22

Project / Client KSC/NASA
NS1011.02

Purpose - Finish abandoning air sparge wells, site restoration.
Personnel - HGL - Dustin L. Parker D. CORE - Raymond R.
Felipe G. Keith F.
Equipment - work trucks, hand tools, materials, SSHP
Weather - Hi - 77° Lo - 68° sunny wind - 13mph E
0700 - All employees met at Pad 39B parking lot conducted TGSM. called KSC support for daily status.
0720 - Mob to SLC 39B main gate and badged in CORE crew.
0740 - Assessed ASW0233 concrete finish. Touched up edge of concrete around manhole opening.
~~0755~~ 0855 - mob to ASW0198. Began abandonment of ASW0198.
0820 - Completed abandonment of ASW0198. Backfill hole.
0825 - Mob to ASW0201. Began abandonment of ASW0201.
0835 - Completed abandonment of ASW0201. Back fill hole.
0836 - Mob to ASW0206. Began abandonment of ASW0206.
0844 - Completed abandonment of ASW0200, Back fill hole.
0850 - Mob to ASW0230. Began abandonment of ASW0230.
0905 - Completed abandonment of ASW0230 - Back fill hole.
0915 - Began cleanup of site. Pick up pin flags remix debris.
1005 - Complete clean up of site. collected photos of site restoration. Secure site.
1010 - Site is secure. All employees offsite.
Note - Used Tremie pipe method to abandon ASW's.

Location Date

Project / Client

Rite in the Rain